Design and evaluation of a Food Journalism prototype application

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Abstract

In the world of internet today users have their own voice. With the rise of social media, consumers of digital content have become producers and personalization is at its peak. This applies to every field, as well as in food journalism, where innovative digital storytelling practices are being implemented. The aim of this research is to design and test a social media mobile application which supports personalized food content. As a result of a four step multimedia production process, Food Stories was developed. Food Stories is a personalized social media application which provides nutrition, content creation and food management tools. Results from the qualitative and quantitative evaluation are promising, as participants were very satisfied with the personalized approach and the integrated tools.

Keywords: food journalism, personalized nutrition, social media, mobile applications.

Application Prototype Links:

Female version

https://projects.invisionapp.com/prototype/ckszsd2yz000u2w0190tjoshy/play

Male version

https://projects.invisionapp.com/prototype/ckszsk6k1000v2w01q07iu5n1/play
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Food shapes and reflects all levels of the human experience. It demarcates cultures, borders, nations, and generations, while its significance cuts across all of these categories.

Food’s smells and tastes account for some of our most sensuous, intimate, and salient memories. On a larger scale, its production brings both order and disorder to local, regional, and national landscapes and controls economies throughout the world. A lack of access to food can cause death, destruction, migration, disease, and even war, reminding us how ecological realities and power relations complicate any simplistic narrative of warm and cherished memories that many of us from relatively privileged societies and backgrounds might associate with the rituals and pleasures of eating. Food shapes families, establishes civilizations, creates relationships, and binds the peoples of the world to one another through trade. Could anything be more important than food? (Chester III and Mink, 2009, p.309).
Introduction

Storytelling has always been part of the humanity. With the prevalence of the internet, stories are being told digitally. With the rise of web 2.0, interactivity took storytelling in a whole new era and gave power to consumers. At the same time, the consistently raising popularity of social media applications gave users the opportunity to become producers and gain their own voice in the digital communities. These changes shifted the attention to users and made personalization one of the most relevant digital practices, applied in every field.

One of these fields is food journalism, which today is full of innovative digital storytelling. The most well-known category of food journalism is restaurant reviews, but it can be many more things such as food trends, food culture, cooking methods and people behind food (Siniauer, 2015). On the more serious side, this field investigates issues like health of food practices and food sustainability. Today, food journaling incorporates the use of technologies like augmented and virtual reality, which achieve greater engagement and manage to inform audiences about important issues concerning food consumption.

These practices are also being used by food companies for promotional purposes. There are many food applications in the market, which offer personalized recipes and other food management tools. However, these applications cover only a specific spectrum of the food field. Until today there are no applications which manage several aspects of food like personalized recipes, nutritional services, restaurant recommendations and online food shopping.

This paper wants to contribute to the body of research on the design of personalized food applications. It analyzes the development of a personalized social
media food application, which covers all aspects of food and nutrition. A four step design approach will be applied. First, a literature overview of multimedia storytelling practices will be provided, as well as of food journalism evolution. Then the design approach of the application will be introduced, and its development will be presented. Lastly, the application will be evaluated, and conclusions will be discussed.
Chapter 1

Theoretical Background

1.1. Storytelling and Digital Storytelling

1.1.1 Why we love stories

Telling stories is the best way to capture interest and storytelling is not a new practice. Telling good stories is especially useful, not only in business environments but in everyday life as well. Susan Goldberg accurately says: “We believe in the power of science, exploration, and storytelling to change the world” (Goldberg, 2015). Why do humans love listening to stories? As humans, we are highly empathetic creatures, and we depend to one another for our survival. Stories are a very efficient way to pass knowledge and important information to other people and this fact has been scientifically proven.

Neuroscientific studies have found that listening or reading stories, activates brain regions that are associated with emotional and social processing, such as the mid-cingulate cortex (Apps et al., 2013; Hsu et al., 2014; Willems & Jacobs, 2016) and the dorsomedial prefrontal cortex (Tamir et al., 2016). The dorsomedial prefrontal cortex plays a key role in social decision making and it is also activated when we listen to other peoples’ desires, beliefs, intentions, and thoughts (Isoda & Noritake, 2013).

These findings suggest that stories promote reflection, identification, socialization, and empathy. They help us explore situations that we have not yet experienced in real life and experiment with possible outcomes. As Rice and Mündel say it “Stories convey both what we do and do not know about ourselves, creating a productive tension between our self-expression (meanings we convey) and our self-knowledge (our current knowledge of ourselves)” (Rice & Mündel, 2018, p. 216).
This is the reason why stories and fiction have played such a key role to our lives since the ancient times.

When a story is being told there are two sides, the storyteller, and the listener. Scientists have found that when the storyteller communicates the story in an effective way, the areas that light up in their brain match with the areas that show activity on the listener’s brain scan. (Stephens et al., 2010). In other words, there is a synchronization between the two parts, that allows empathy to take place. The listeners feel like they experience the story themselves. To take it to a deeper level, listening to stories that resonate with us, changes our brain’s chemical signals. Specifically, a rise on our oxytocin levels take place, a hormone that is produced to promote connection, intimacy, and trust (Zak, 2014).

It is more than clear that good stories are great emotion generators and being able to create emotions is and has always been a powerful tool (Willems & Jacobs, 2016). If we think about it, everything around us is a story, even the one we tell about ourselves.

1.1.2. **Multimedia storytelling**

Telling stories is not a new thing, but the means through which they are told has dramatically changed over the years. From the cavemen’s hieroglyphics to the oral tradition, written words, and television, we now tell digital stories with the help of computer-based programs. Multimedia storytelling is achieved through the combination of digital elements such as photos, text, video, and audio with a form of narrative (Bibi et al., 2020; Robin & McNeil, 2019). These elements complete each other in order to form an interactive story, where listeners can directly participate and even contribute to its creation (Barber, 2016).
1.1.3. **Linear and non-linear storytelling**

Whereas linear stories consist of standalone digital elements that basically say the same story in a different form, non-linear stories are made up from digital media, where each one of them tell a different part of the story with the help of interactivity and hyperlinks (Letonsaari & Selin, 2018; Van Krieken, 2018). In a linear story, the events are fixed, and the user cannot change their order. Non-linear stories do not have a clear beginning to end construction and their main characteristic is interactivity, as the user is able to choose what part of the story to “listen” and when (Dimoulas, 2015). Figure 1.1 depicts the difference between linear and non-linear storytelling.

![Figure 1.1. Linear and non-linear storytelling (Dimoulas, 2015, p.26).](image)

1.1.4. **Interactive storytelling**

With the rise of Web 2.0, interactivity became a significant characteristic of web services. The Internet became a place of collaboration between its users, where the consumer was able to share information online. Today this phenomenon is much more intense, as web users now are both consumers and producers (Grishakova & Ryan, 2010).
Interactivity, a term that is often used in the context of digital storytelling, means that the user is in control, in a way that their actions affect the software (Al Said, 2019). According to Whistler (2012), interactivity has six dimensions: Feedback, Control, Creativity, Performance, Communication and Adaptability. Feedback means that the user gets a response to their actions, while control and creativity mean that they can control interaction behavior and add or change the experience. Performance, as one of the six dimensions, refers to the users’ ability to create some kind of new object, while communication means that the user is able to communicate with another object. Last but not least, adaptability refers to behavioral change in users’ experience.

Interactivity of storytelling is crucial as it is a significant factor of an immersive experience. In order to have an immersive experience, the user must have a sense that they exist in the environment (Choi et al., 2018), which can be achieved through interaction with it. In other words, the display of captivating image and audio is not enough for complete immersiveness, and this is where interactivity can make a difference.

1.1.5. User generated content
Web 2.0 and its interactivity helped consumers adopt the role of producers as well. This happened as many websites started incorporating the User-Generated Content (UGC). UGC is any type of content produced by the users of digital communities that is available for other users to access (Reyes-Menendez et al., 2020). Some of the digital environments where UGC is used are websites, blogs, video, and photo sharing applications such as Youtube and Instagram, video games, advertisement, and educational databases such as Wikipedia.

UGC in advertisement and marketing can be described as the electronic word-of-mouth, which is considered more reliable, as it is unbiased and separate from
personal interest (Bahtar & Muda, 2016). Brands today are aware of the power that
this “internet available word-of-mouth” holds, that more and more of them choose to
incorporate UGC in their advertisement practices (Kim & Song, 2017).

Particularly on Social Media Applications such as Facebook, Instagram,
YouTube and LinkedIn, sponsored posts, where brands pay social media users to
promote their products, have become a common practice. A key element of this type
of advertisement is the ability to target the appropriate audience through the social
media algorithms that collect various data from users such as the pages they visit,
their likes and shares, and their overall interactions within the medium (Dolan et al.,
2015; Luo et al., 2018). We are going to further analyze data collection and how they
can serve personalization and engagement.

1.1.6. Personalized content

Data collection and audience targeting in social media applications can be
useful not only for showing people the products they are most likely to need, but for
keeping them engaged in general. This means that the algorithms offer personalized
content to the user, prioritizing the content that they most likely want to see, whether
this is an ad or other users’ posts (Milan, 2015). In this way, web interfaces respond to
user’s input or navigation and adapt according to their preferences and needs in order
to deliver a customized and thus more engaging experience (Kalyanaraman & Sundar,
2006). In fact, customization is desirable from web users, and this can be explained in
various ways.

From a physiological aspect, humans seek differentiation in order to fulfil their
need to establish a distinct self-identity that enables them to stand out (Vignoles et al.,
2000). In this way, customization offered by online environments add value to users
by filtering whatever is irrelevant with them and acknowledging who they are and
what they want to see on the web.
Moreover, customization helps with information overload by helping the user access the desired information more quickly. In a web overflowed with information, users have to make a big effort in order to find what they seek for. According to a survey conducted by Kalyanaraman and Sundar (2006), when exposed to highly customized content, users make fewer clicks during their navigation and tend to revisit the sites that offered customized content to them.

According to a survey conducted by Accenture in 2018, 83% of consumers are willing to share their online data in order to experience personalized web content, as long as businesses follow a straightforward privacy policy that ensures customer control over their personal information (“Making it personal”, 2018). The above suggest that web environments have been driven towards a user-centric approach, where users are not passive consumers anymore. Instead, they have their own voice and web services are designed according to their specific interests and needs.

1.1.7. User Experience Design

The shift towards a user-centric approach in web services has led to User Experience Design (UX). UX Design started to evolve as designers gradually shifted their interest from technology by itself to human-technology interaction (Moore & Arar, 2018). There are other terms related to UX Design, such as User Interface Design (UI) and Usability, that are sometimes considered to be the same terms. However, UI and Usability are two aspects of UX Design, which covers other areas too (Heonsik, 2017). UI describes the interaction between a user and a system that requires data input and command actions by the user, which result to changes on the system (Dillon, 2006; Heonsik, 2017). The communication between them is initiated by the user and the system (for example a computer or a mobile phone) provides feedback through the way that user’s action causes it to change.
On the other hand, UX Design refers to the whole experience of purchasing a system, product, service, or content, integrating it, maintaining it and all the in-between aspects. This includes the system’s design and branding, the user’s initial expectations, the first use of the system, its usability and functionality, as well as the support offered by the system producers (Heonsik, 2017). According to Chapman and Plewes (2014), UX emerges from two values, an emotional one and a utilitarian one, which then are delivered by three design aspects: Aesthetics, Functionality and Usability.

Functionality is the set of functions that the system offers to the user in order to help them achieve a goal and usability is the way that these functions are offered through the system. When a system is simple to use and effective, then it scores high in usability. Aesthetics is the design of functionality in a pleasant and accessible way.

One of the most important aspects of UX Design is the “Why” behind the creation of a product (Hokkanen & Väänänen-Vainio-Mattila, 2015). This means that in the early process of UX Design, it is necessary to understand the needs of the users and make specific the solutions that the product gives to their problems. Data on this stage can be collected through research, surveys and interviews and they should be detailed enough, so that the design team completely understands what their target user needs from their product. This process aims for the creation of Personas, the product’s ideal users (Tomlin, 2018). It is important for the designer to actually try to “get in the user’s shoes” and not just superficially collect data.

Personas are useful during the hole process of the design, as the product designer can use them to make frequent quality checks to determine whether each designed tool helps the Personas achieve their goals. It is clear that User Personas are
a powerful tool in the design process, and it should always be used as a part of UX Design.

1.2. Infotainment

1.2.1. Terms and definitions

The term infotainment did not exist before the late 1980’s. Until then, government regulations concerning broadcast television from private parties was not permitted. But in the late 1980’s these regulations started to loosen and with the rise of commercial television channels, the audience’s fragmentation and competition for viewers was a reality (Boukes, 2019).

This competition and the aim to produce content that attracts the audience, led to a variety of choices on television. People that did not want to watch the news simply avoided them and turned to other options, more entertaining ones. Today new media offer a plethora of content (mostly entertaining) for audiences to choose from, and as Boukes suitably describes it “the public is considered to consist of consumers who want to be entertained rather than citizens who should be informed” (Boukes, 2019, p.1). In order for news outlets to be competitive and maintain advertising revenues, a swift to this entertainment wave had to be made. Here comes the term infotainment, which refers to the combination of information and entertainment in the delivery of content through different media types (Baym, 2008; Boukes, 2019).

![Infotainment concept](image_url)  

Figure 1.2. Infotainment concept (Boukes, 2019, p.2).
1.2.2. Infotainment programs
According to Bayam (2008), it is difficult to give a clear definition to what exactly an infotainment program is. Instead, he chooses to describe infotainment through a scale with two ends, from which one consists of formal programs with policy content and the other one consists of informal programs with personalized content. Between these two ends, one can find a variety of style and content program combinations.

Infotainment programs were accused by many that they did not have a place in a democratic society (Bayam 2008; Otto et al., 2016) because they were degrading media’s purpose of broadcasting educational content, therefore preventing citizens from executing their democratic duties. On the other hand, there are those who argue that infotainment programs not only are harmless, but also necessary in a democratic context, as they are creating new paths between politics and peoples’ everyday lives, therefore attracting audiences that would not be interested in political news otherwise (Bayam 2008; Boukes, 2019).

1.2.3. Infotainment implementations
Nowadays, infotainment is used in many areas such as journalism, education, and automotive industry (Declercq et al., 2018; Gupte & Askhedkar, 2018; Kaewunruen, 2019; Ramadani Arjo et al., 2019; Davis et al., 2020). Infotainment is widely used in new media, especially in social media applications such as Facebook, Twitter, and Instagram (Studen & Tiberius, 2020). This makes it possible for infotainment to reach a continuously growing audience through the use of social media networks, which were initially created to promote connectivity and public share of personal information and thoughts.

Users of social media are both consumers and producers of infotainment, producing their own news content that can be used by journalists as part of their news
feed generation. In a study conducted by Majid and colleagues (2019), it was found that infotainment was one of the three key factors that influence the effectiveness of social media messages concerning brand attitudes and behavioral intentions. Social media users seek for informative content that is up to date, useful and relevant to their specific needs and desires. Moreover, they want information to be presented in a fun and interesting way, a fact that introduces the entertainment element.

Information on social media can sometimes become hectic and many times social media users find it difficult to process this amount of data. But when information is combined with entertainment and storytelling and is being offered in a purposeful and compendious way, it can draw attention and become memorable. Of course, in the case of brand awareness, this technique offers a substantial benefit as it facilitates emotional bond between the brand and the audience.

Infotainment is being implemented both in new and old media, but in physical places too and it can reach audiences through magazines, newspaper, radio, live drama, television, web blogs, podcasts, social media posts and videos and other medium. One of the major areas where infotainment is indicated is food journalism. In order to examine the implementations of infotainment on food journalism we have to define what journaling on food is considered to be.

1.3. Food Journalism

1.3.1. Terms and Definitions

Food journalism has a long history, starting from traditional media like newspapers and television, progressing to new media like food blogging and social media posting. Food journaling can be many things from restaurant reviews, food trends, food culture, cooking methods and people behind food. It can also be the investigation of serious issues like food sustainability and health of food practices. It
can be storytelling like the story of Angie Wang, a California based illustrator from Taiwan that describes her adventurous efforts to find “shui zhu yu” (water boiled fish), a Chinese plate that she used to eat every night with her father (Wang, 2018). As Siniauer describes it “Besides facts, you need a good story. Wrap your information in a story – there is always one” (Siniauer, 2015, p. 14).

### 1.3.2. Evolution of food journalism: the beginning

In the 1880’s, food journalism was already part of the first newspapers which included recipes in some of their issues (Finneman, 2020). Back then, knowing how to cook was a big accomplishment and a great chance for women to gain publicity through their recipes. It was also a big chance for women who desired a job on journalism, as at that time, they could not really work anywhere else. In this context, many authors agree that food journalism emerged from the women’s page in newspaper columns that included advice about housekeeping, cooking, and food (Forné, 2017).

The first significant appearances of food journalism started in the 1940’s and one of the first food journalists of that period was Jane Nickerson (Voss, 2020). Jane Nickerson worked at “The New York Times” as a food editor during the World War II, where she wrote about war news in combination with food product developments and recipes. She also wrote about restaurants in New York during the 1950’s and by that time, there were approximately 600 newspaper food editors across the country (Finneman, 2020). The first magazine focused on food and wine was “Gourmet” and it was published in the United States in 1941 (Forné, 2017).

### 1.3.3. Post-World War II era

It was after the World War II that the public’s interest about food and particularly new dishes started to increase. This happened because soldiers that came back from Asia and Europe had seen new foods from these places, that suddenly draw
public attention. The new recipes and their ingredients where all over newspapers and cookbooks. Another contributing factor for the rise of food interest was international travelling which also made its appearance after the World War II. The post-War era shaped food journalism and its significance (Hanke, 1989; Voss, 2020). Newspapers and magazines wrote about food news, new recipes, and food nutrition studies.

At the same time, they started incorporating advertisement about food products, grocery stores and kitchen appliance (Voss, 2020). Around this period, food journalism started its appearance on television too. The first television cooking program in the world was called “Cookery” and it was launched by BBC in the United Kingdom in 1946 (Timeline of Television Cooking Show Personalities, 2020). It was 10 minutes long and its star, Philip Harben, showed to the audience what recipes they could make with simple ingredients that they had at home.

In 1993 the Food Network, which was the first channel dedicated to food, was launched in the United States (Rossato, 2015). In 2002, it was followed by the BBC Food Channel, which was launched in the United Kingdom. Food television shows became very popular around the world and at the same time, in the late 1990’s the first online discussions about food were making their appearance on websites and blogs. In order to explore the online presence of food journalism we first have to deep into the benchmark of online journalism as a whole area.

1.3.4. Journalism going online: can we “Snowfall” this?

With the evolution of the internet, magazines and newspapers started making their online presence. According to many scholars, journalism in general was not really redefined with new practices within the digital sphere (Planer & Godulla, 2020). Instead, they argue that it focused on reproducing news that was already accessible offline.
The answer to this statement came from “The New York Times” and the Pulitzer Prize winning story “Snow Fall: The Avalanche at Tunnel Creek”, which redefined online journalism (Branch, 2012). Snow Fall is a multimedia story which is considered such a high-end project that editors who desire to create similar projects verbalize it in the phrase: can we “snowfall” this? (Dowling & Vogan, 2014).

Snow Fall is an astonishing example of multimedia interactive storytelling technics in action. It consists of six chapters, and it provides many digital tools such as video, audio, and interactive graphics along with interviews that the user can access individually (Planer & Godulla, 2020). There is a list of other multimedia journalism projects that came after Snow Fall and were recognized as outstanding (Ojo & Heravi, 2017) and some of the fields that they cover are newsrooms, investigative journalism, data visualization, data journalism and news data apps.

The criteria used in order to classify these projects as award winning were innovation of data reporting, the reported story itself (data editing and plot of the story), technology used in telling the data story (and how it works across different media) and whether the data were well combined and integrated into a bigger picture instead of being just a statistical report. Most of the projects (59%) used interactivity in their stories and a big amount of them (27%) provided options of filtering and selection. The biggest part of the projects used maps and graphics as interactive elements in their stories, whereas a smaller amount (10%-18%) used videos, web applications and question games.
Food journalism did not keep the new digital storytelling tools away from its practices. Although even until 2015 most of the revenues were still coming from print (Sieniauer, 2015), food journalism was inevitably stepping towards the online era. Today there is a plethora of digital food content, such as recipes, restaurant reviews, culture food reviews, travel food documentaries and of course public discussions about hard issues like food sustainability and health of food practices. Such content can be found on websites, blogs, forums, social media, and video applications like Youtube. We can definitely say that food is being discussed online more than ever.
Following, we are going to further explore the different types of online presence of food journalism today.

1.3.6. Food journalism websites

a. Tripadvisor

One of the first and a well-known website that offers reviews from destinations, hotels, restaurants and other travel related content and services is TripAdvisor (https://www.tripadvisor.com/), which was founded in 2000 (Media Center: About Tripadvisor, n.d.). TripAdvisor has a separate section with restaurant reviews, where the user can search according to specific locations. Each restaurant comes with reviews and photos from people that have visited it, as well as detailed contact and location information (with map stigma).

b. Eater

Eater (https://www.eater.com/) is a famous website that provides its audience with articles, videos and podcasts about food news and recipes. In their website, users can also find a separate section with restaurant guides for popular cities of the U.S. The guides are accompanied with interactive maps where the user can select and read about a specific restaurant. Eater has a Youtube account (https://www.youtube.com/channel/UCRzPUBhXUZHcIB7B5bURFXw ) with 2.68 million subscribers that can watch videos which combine information and news about food with entertainment (infotainment).

Eater held a list with every year’s best food stories from 2014 until 2016 (Rosner et al., 2016). The stories in these lists accurately represent the evolution of digital storytelling technics in the field of food journalism. Starting from 2014 (Rosner, 2014) a reader can see basically longform food articles with little to no interaction and basic multimedia elements like still photos. The stories listed on the year 2015 (Rosner, 2015) started to incorporate more interaction and bigger photos
with animated editing elements. Stories of the year 2016 (Rosner et al., 2016) have more links in them, even bigger photos, animation elements and videos for the readers to watch.

c. Saveur

Another website with food journalism content is Saveur (https://www.saveur.com/), which offers recipes and international food stories in its “Travel” section.

d. New Food Magazine

New Food Magazine (https://www.newfoodmagazine.com/) is a U.K. based website with content concerning mainly food safety, sustainability and nutrition.

e. Delish

Delish (https://www.delish.com/) is known for the fact that it provides its audience with a large amount of video food related content.

f. Food Business News

Someone who wants to get informed about the business part of the food industry can visit Food Business News (https://www.foodbusinessnews.net/topics/113-food-manufacturers), which offers analysis and news content of the food market, such as food entrepreneurship and manufacture, as well as a weekly food list with the latest food products.

g. Food&Wine

An interactive tool in recipes that is worth to be mentioned is provided from another website with the name Food&Wine (https://www.foodandwine.com/). The website’s recipes come with clickable ingredients that enable users to find shops near their location to purchase them. The users can also review the recipe, print it, or post
it to Facebook and/or Twitter. Some of its articles come with photo slideshows, an interactive element that adds up to the whole experience.

1.3.7. Innovative food storytelling

There are many examples of innovative digital stories in the field of food journalism. As mentioned before, one of the most impressive digital food stories is a food story called “In Search of Water-Boiled Fish”, published on “Eater” (Wang, 2018) in 2019. It was made by Angie Wang, a California based illustrator from Taiwan. Angie Wang describes her adventurous efforts to find “shui zhu yu” (water boiled fish), a Chinese plate that she used to eat every night with her father. The whole story is told through a scrollytelling graphic illustration with animation elements, accompanied with short text lines. Her story won the James Beard Media Innovative Storytelling Award in 2019 (LaForme, 2019).

In 2020, the same award went to “Best New Restaurants 2019” (JBF Editors, 2020) from Kevin Alexander, Nicole A. Taylor, and Adriana Velez that can be found on “Thrillist” (Alexander et al., 2019). This innovative, also scrollytelling story, is a list with the best new restaurants of the year 2019 in the U.S., which combines photos with interactive audio that reveals parts of each restaurant’s story. The whole presentation of each restaurant is captivative as the writers incorporate detailed description of foods and historical information about the restaurant’s location.

Another innovative infotainment story brought by the “Tablet Magazine” (https://www.tabletmag.com/) is the “100 Most Jewish Foods”(https://100jewishfoods.tabletmag.com/). A table full of plates that can be spined by the user, who is being invited to click on the foods and read about the history of them. It is about information given in the most captivative and fun way.

Last but not least, the “What’s in a Food Truck?” that can be found on “The Washington Post” (Berkowitz et al., 2018) is a 3D illustrative, interactive presentation
of what exists in a food track. The story involves text and still photos, as well as 360 photos of the inside of a food truck. All these digital stories are indicative of the way that food journalism is using innovative digital tools and open the road for food journalism’s digital future.

1.3.8. Food journalism and social media

With the digitization of food journalism, food content started making its appearance on social media like Facebook, Twitter, Instagram, and Snapchat. With the massive audience response to social media, food journalism became a part of them, and it enriched its tools in order to get social media presence and access their users. One of the first fields of food journalism that made its appearance on social media was restaurant reviews, whether it was just a picture of a restaurant with some words underneath, or a discussion about restaurants between members in a private Facebook group (Siniauer, 2015).

1.3.9. Food journalism and augmented reality

The digital tools used on social media have evolved, incorporating new technologies such as Augmented Reality (AR). An example of AR use in food journalism is what “The Economist” (https://www.economist.com/) did with the help of Snapchat’s filters (Scott, 2018). In 2018 they created a series of filters which allowed users to see what their meal could look like in 30 years, with infographics that explained each food the user selected. The filters included a food plate with algae, artificial meat and insects and the infographic came along with a one-minute audio narration.

Another example of what AR implementation on food content can do, is Domino’s filter on Snapchat, which brings a 3D pizza in front of the user (Askew, K. 2018). The pizza has a tappable “order” button, which leads to the pizza menu of Domino’s application. Kabaq, the food tech startup company that created this
Snapchat filter application, has worked with many food brands, and has helped them create similar AR filters which bring their food menus into life. This can be a powerful tool for food market, especially if we consider the effects that visualizing food can have on human appetite (Spence et al., 2016). Kabaq plans on expanding its AR implementations on supermarkets and groceries with innovative stories of how their products are produced and sourced, as well as presenting recipes and ingredients. It is more than clear that AR offers endless possibilities on innovative storytelling concerning food consumption, both from an educational and a commercial side.

1.3.10. Food journalism and virtual reality

Virtual Reality (VR) has also started to make its appearance as a tool in food journalism content. EIT Food (https://www.eitfood.eu/) is an organization established by the European Institute of Innovation and Technology, which aims in raising awareness concerning food sustainability with the use of innovative technological practices. Their actions include the development of new sustainable products, the education through study programs, webinars and free online material and the funding of entrepreneurship.

In 2019 EIT Food started a series of educational VR videos with public access (https://www.foodunfolded.com/videos/dysphagia-3d-printing-easy-to-swallow-food) in order to inform people about their enterprise in a fun and engaging way. Their videos are an example of infotainment implementation on food journalism. The audience can find a variety of VR videos about sustainable food packaging, alternative sources of protein and 3D food printing that can be watched using a set of affordable VR glasses.

The organization has also created an application for pre-school children education about fruits and vegetables (https://www.med.qub.ac.uk/EITschoolfood/index.php/app-moles-veggie-adventure/).
through the adventures of “Mole”, an animated animal character. The game includes collecting seasonal vegetables and fruits, identifying their color as well as learning where they are grown and initiating discussions between children groups that play it. All the above examples are indicative of how technology can be used by food journalism and how it can help audiences creatively engage with both promotional and educational food content.
Chapter 2

Methodological approach and background

2.1. Methodological models of multimedia production

As mentioned before, multimedia content is achieved through the combination of digital elements such as photos, text, video, and audio with a form of narrative (Bibi et al., 2020; Robin & McNeil, 2019) that complete each other with interactivity. There are four interdependent multimedia production phases: Analysis, Design, Development and Evaluation (Dimoulas, 2015). These four phases organize the procedures needed for an integrated multimedia project production.

2.1.1. Analysis

After the conception of the idea, it is necessary to proceed to the Analysis phase in order to investigate its specific parameters and make the right adjustments. As it investigates all of its parameters in detail, this step many times leads to the reconsideration of the initial idea. During this phase there is a presentation of all the functional and technical objectives of the project, with the tools that are going to be used. In addition, the targeted audience is investigated in order to deeply understand their needs and goals and how the product can help achieve them. Every audience has its unique characteristics and the way that people interact with an interface is affected by many aspects such as their age, race, personality and needs. Moreover, the current state of the art is analyzed, and relevant applications are investigated in order to create a useful product that has its own place in the market. The final step of the Analysis phase is the creation of a timetable which indicates the time needed for the implementation of every step.
2.1.2. Design

The Design phase that comes after the Analysis, focuses on the structural and functional development of the multimedia product, which includes the interaction elements. Basic screens are presented through low fidelity prototypes and the specific tools for the implementation phase are selected. This stage is directed by the data collected from the Analysis phase along with UX Design rules, in order to make a functional, usable, and aesthetic product.

2.1.3. Development

The Development phase is the implementation of the Design, using the specific tools that have been selected. The low fidelity prototypes are used as a guide in order to create high fidelity interactive prototypes with detailed photos, text, video, and graphic elements. This stage includes the usability testing of the high fidelity prototypes, which results in making improvements to the design, until the final product development takes place. This process complies with the user-centered design, according to which the design should serve five parameters: Effectiveness, Efficiency, Engagement, Error tolerance and Ease of Learning (Dimoulas, 2015). This phase can also take the form of creating the actual product, like the web page of the application.

2.1.4. Evaluation

The Evaluation phase is the last step of the multimedia production, and it is a very important one, as it tests several parameters of the product through qualitative and quantitative tools. Such tools can be questionnaires and/or interviews that lead to conclusions regarding the initial hypotheses and provide useful insights for product improvements.
2.2. Hypotheses

The present work demonstrates the implementation of multimedia storytelling and user experience design techniques on a food related mobile application. The research hypotheses aim to investigate whether user-centered and user experience (UX) design techniques can fit into a food related mobile application and whether the audience is willing to engage in the use of such an application. The hypotheses will be tested through qualitative and quantitative methods. The qualitative data will be collected through usability testing and the quantitative data will be collected through a questionnaire. The hypotheses that will be tested are the following:

Hypothesis 1: User-centered design and user experience (UX) design techniques can be well fitted into a multimedia food journalism mobile application.

Hypothesis 2: Digital storytelling and user experience (UX) design techniques have a positive influence on audience engagement in a multimedia food journalism mobile application.
Chapter 3

Project Analysis

3.1. Initial idea analysis

The initial idea behind the Food Stories project is to create an interactive multimedia mobile application with content related to food. Although there is a plethora of food content online, as well as many food related applications today, there is a lack of a product that combines multiple aspects of food with personalized content. Food Stories is a social media application aimed to help people customize their food preferences, find recipes according to those preferences and make the recipes in a simple, effective way.

The two major characteristic of the application are the personalized content and the synergistic power of social media, where users can become creators and can benefit from one another by exchanging information. Users will be able to find and create personalized recipes that will be presented in a “step by step” mode, similar to the “stories” in Instagram application (https://www.instagram.com/). Unlike Instagram stories that play on an auto mode, the recipe steps will be tappable so that the user can proceed to the next one whenever they are ready. In addition, the application will give users easy tools that will enable them to become content creators, without having to use expensive equipment like professional cameras and software for photo and video editing.

As mentioned before, the implementation model is based on human-centered design and the processes of analysis, design, development, and evaluation are being executed in a spiral model. Thus, the targeted audience plays a key role, and we have a constant redefinition of goals with the equivalent adjustment in design and implementation, until the targeted criteria are met (Dimoulas, 2015). The product will
take the form of a social media application, where every user will have their own profile and thus will be able to fully engage with product features and interact with other users. This means that it will be designed for mobile use, as most social media are primarily used through mobile devices. In order to keep track of the project process it is necessary to create a timeline of the required steps.

3.2. Timeline

The project life cycle is broken down into four steps, which facilitate consistency and help to keep track of the project production process. The first step of the project creation is the examination of similar services. This step is very important, as it sets the base for the creation of a useful product that has a unique place in the market. During this process, existing recipe applications will be examined, and their specifications will be analyzed. This step includes the targeted audience analysis, which reveals their specific needs and preferences. The next step is the design of the application, where low fidelity prototypes will be created. The design of the product is also very important because it defines the usability level and therefore it needs to be executed carefully. Following the design phase, the development phase will take place with the creation of the high fidelity prototypes. The final step is the evaluation of the product, which will provide answers regarding its usability and will give us the final conclusions for the success of the project and for future recommendations.

3.3. Examination of similar services

As mentioned in the timeline, the first step of the project creation was the examination of similar services. During this process, the specifications of five recipe
applications were analyzed in detail (see Appendix 1). Table 3.1. displays the advantages and disadvantages of each application.

**Table 3.1. Advantages and disadvantages of similar services.**

<table>
<thead>
<tr>
<th>Recipe applications</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yummly</td>
<td>High personalization, aesthetic design, multiple tools for recipes and food management, some recipes with step to step video instructions.</td>
<td>Lack of community, users are not creators, most recipes are not presented in an easy to execute way.</td>
</tr>
<tr>
<td>Food Network Kitchen</td>
<td>Personalization, aesthetic design, innovative concept with chefs, tools for recipes and food management, step by step presentation of recipes.</td>
<td>Lack of community, users are not creators.</td>
</tr>
<tr>
<td>Cookpad</td>
<td>Community, users can be creators, easy step by step recipe upload.</td>
<td>Low personalization, no tools for recipes and food management, deficient recipe information.</td>
</tr>
<tr>
<td>Epicurious</td>
<td>Multiple search filters, aesthetic design, shopping list, cooking timer.</td>
<td>Deficient recipe information, standard presentation of recipes, lack of community, no tools for recipes management.</td>
</tr>
<tr>
<td>Kitchen Stories Recipes</td>
<td>Detailed information about recipes, search filters, shopping list, step by step recipe presentation with photos, easy step by step recipe upload, community – users can be creators.</td>
<td>Low personalization.</td>
</tr>
</tbody>
</table>

3.4. **Targeted audience**

The targeted audience plays a key role in every process of the project. In order to make the content personalized, it is crucial to create user experience (UX) personas with the help of interviews (qualitative research). As mentioned before, UX personas
are samples of the ideal users of the product. A persona is created through surveys and interviews which aim to shed light on the ideal users’ goals and problems (Tomlin, 2018). By examining the ideal users’ personalities and needs we are able to design a useful product that helps users find solutions to their problems.

Here it is very important to deeply connect with the user and achieve an authentic identification, in order to accomplish a personalized design. Quantitative research with questionnaires will also be conducted in order to collect information about the users’ preferences. Age group of 25 to 34 will be prioritized, as this bracket is the most familiar with the application’s technology and would be more likely to use a recipe creation related product. The age group of 35 to 44 comes right after, constituting a lower percentage of the targeted users but still high enough to investigate their preferences.

During the phase of design, usability testing will take place and adjustments will follow based on the outcome. The usability testing will be done with the help of two experts in the area of multimedia productions and nine people that fall within the target group age. Finally, the targeted audience will evaluate the product and the final conclusions will be made.

3.4.1. Qualitative research: UX personas creation through interviews

The most suitable way to create UX personas is through interviews with people that represent the target group. Ten interviewees were selected, with age range between 25 and 42 years old. Two of the individuals had experience on the food market. More specifically, one of them works as a personal trainer and has a bachelor in nutrition. The other one works as a CEO of a company in the food industry. All of the individuals were selected as representatives of the target age range and for their lifestyle that creates specific needs around food and nutrition.
After the interviews process, five types of users (personas) were created. These five types of users set the base for the design of the product. The first type is a nutrition specialist (Figure 3.31.) who needs healthy meal options with deep nutrition information in recipes without spending much time. This persona represents every user who needs a nutrition personalization tool for their job. The second type of users (Figure 3.32.) is people who have different eating habits from their roommate and have to deal with portion control and limited cookware and time. The third user persona represents working mothers who need quick and healthy recipes for the family (Figure 3.33.). Users with interest in international cuisine and the more artistic aspect of cooking are represented by the persona in Figure 3.34. The final user persona is demonstrated in Figure 3.35, and it represents users with history of eating disorders.

As a first step, the interviewees answered demographic questions about their gender, age, income, and residence. After the demographic information, questions about their background followed. The questions regarded their job and their civil status. The main questions that were asked in order to collect their preferences were 10 and they are listed in Table 3.2. The questions investigated their goals and challenges around food, nutrition, and cooking. In addition, interviewees were asked to express their beliefs about food and nutrition in a quote. This is a helping tool in order to deeply connect with their personal beliefs and point of view. After selecting the interviewees’ answers, the personas were created. Their goals and challenges were analyzed and the first specifications of the application were created based on them.
Table 3.2 Interview questions for the creation of UX personas.

<table>
<thead>
<tr>
<th>User experience interview questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How many times a week do you cook?</td>
</tr>
<tr>
<td>2. How much time does it take you to decide what recipe to cook?</td>
</tr>
<tr>
<td>3. How much time does it take you to cook?</td>
</tr>
<tr>
<td>4. What are your goals regarding nutrition?</td>
</tr>
<tr>
<td>5. Do you follow a specific diet?</td>
</tr>
<tr>
<td>6. What are your goals regarding cooking?</td>
</tr>
<tr>
<td>7. How often do you cook new recipes?</td>
</tr>
<tr>
<td>8. What problems do you face when you search for recipes?</td>
</tr>
<tr>
<td>9. With what criteria do you choose what recipe to cook?</td>
</tr>
<tr>
<td>10. What problems do you face when you cook?</td>
</tr>
</tbody>
</table>

The qualitative research and the creation of the UX personas was the core investigation of the target users’ needs and preferences. The interviews made clear that there is a need for deep personalization as every individual has their own preferences. From the analysis of the interviews some patterns arose, which set the base for the application’s specifications. More specifically, there is a clear need for filters in recipes that will allow users to search according to specific diets, time, cookware, ingredients, portion, budget, and cooking level. Moreover, it is important for the recipes to include ingredient substitutions as an extra filter of personalization. Users should be able to have detailed information about the recipes, such as calories, macronutrient, and micronutrient analysis. It is crucial for the users to have their own
profile, where they will be able to track what they eat and have their recipes saved and organized.

Furthermore, it is also important for the user to see the details of their nutrition whenever they want to and not every time they go to their profile. This is particularly crucial because there are users that have a history with eating disorders and get triggered when they see details such as calories of their food. Eating disorders is a parameter that should be included in the design process because they affect 70 million people globally (SingleCare, 2021). Besides this fact, there are people that still do not want to analyze everything that their food contains and by providing profile management tools, we give them the option to decide by themselves.

One important feature of the recipes is that they should be accompanied by reviews, so that the users can predict the end product of their effort. Considering that the application will have a social media character, the reviews will have power and they will be more likely to give an accurate success rate of the recipe. After the quantitative research, specifications will be analyzed, and the product’s features will take their final form.
Figure 3.31. UX persona "Markos".

Demographics
- Greek Male
- Age 28
- Annual Income: 10,000-15,000€
- Urban

Background
- Personal Trainer
- Works with physical and online appointments
- Single
- Lives on his own

Behavior
- Cooks 3-4 days a week
- Searches recipes mostly on websites
- Recipe decision time is 20-30min
- Cooking time is 30min - 1 hour

Challenges
- He finds some of the recipes on the internet inaccurate
- He spends much time comparing recipes and modifying them in order to make them specific to his goals
- He cannot easily find alternative recipes that combine health with good taste

Goals
- Keep a balanced diet
- Keep detailed track of macro/micro nutrients and calories in meals
- Find recipes for his clients according to their specific goals
- Keep grain and gluten out of his diet

How we help
- Personalized detailed profile
- Filters for specialization in recipes
- Macro/micronutrients in recipes
- Ingredient swaps for specific diets
Figure 3.32. UX persona "Maria".

Maria
"Food must be simple, nutritious and tasty. Cooking is for everyone and it should be adjustable to our everyday lives."

Demographics
- Greek Female
- Age 26
- Annual Income: 10,000€
- Urban

Background
- Works in a marketing company (8-10 hours a day)
- Lives with her partner

Behavior
- Cooks 3 days a week
- Searches recipes mostly on applications
- Recipe decision time is 5-10 min
- Cooking time is 30 min - 45 min

Challenges
- She does not have much time to cook
- Most recipes have too many ingredients
- She does not have a lot of cookware because she has a small kitchen
- Sometimes she cannot estimate the food portions and she ends up wasting food

Goals
- Keep a balanced diet
- Cook easy and quick recipes
- Cook vegetarian recipes for her boyfriend
- Cook with few ingredients and cookware

How we help
- Recipes according to time
- Recipes according to cooking level
- Recipes according to how much and what cookware one has
- Vegetarian filters
- Portion filters
Figure 3.33. UX persona "Eleni".

Eleni

"It is difficult for women to keep balance between work and family nowadays. I want to take care of my family the best way I can and sometimes I really need help."

Demographics
- Greek Female
- Age 34
- Annual Income: 8,000€
- Urban

Background
- Works as a saleswoman at a clothes shop (10-12 hours a day)
- Married with two children (9 and 6)

Behavior
- Cooks 4-5 days a week
- Searches recipes mostly on websites and blogs
- Recipe decision time is 10-15min
- Cooking time is 30min - 1 hour

Challenges
- She does not have much time to cook
- Recipes often do not succeed and she loses time
- Many healthy recipes have too many and/or too expensive ingredients
- She often loses recipes that she likes and has to search them again

Goals
- Keep a schedule around food
- Cook staple recipes that she and her family loves
- Save her most loved recipes in one place
- Cook healthy versions of sweets because her children love them and crave them everyday
- Cook recipes that do not require much time

How we help
- Recipes according to time
- Recipes according to cooking level
- Filter for recipes that other users have rated high in success
- Save her recipes in one place
- Ingredients filter
- Budget filter
- Weekly schedule
Figure 3.34. UX persona "Alexandros".
Figure 3.35. UX persona "Stella".

Stella

“I am recovering from anorexia and I need help with balanced eating. I wish society wasn’t so hard on women and didn’t have all these beauty standards”

Demographics
- Greek Female
- Age 25
- Urban

Background
- Studies pedagogy
- Lives alone in a city away from her home

Behavior
- Cooks 2-3 days a week
- Searches recipes mostly on social media
- Recipe decision time is 20-30 min
- Cooking time is 1 hour

Challenges
- She does not have skills on cooking
- She can’t spend much money on nutrition
- She often gets triggered when she sees calories on food labels or in recipes
- If she doesn’t schedule her meals she ends up eating unhealthy food which backfires to binge eating

Goals
- Learn to cook
- Cook on a budget
- Learn nutrition tips and get inspiration for a balanced diet
- Schedule her meals
- Learn to eat without counting calories
- Find motivation to keep recovering and adapt to a healthy lifestyle

How we help
- Recipes according to budget
- Recipes according to cooking level
- Recipes according to specific nutrition needs
- Hide specific information from recipes (i.e. calories)
- Weekly schedule
- Healthy eating tips
- Follow professionals on eating disorders
3.4.2. *Quantitative research*

Quantitative research was conducted through a questionnaire distribution. In this research, the questionnaire was used as an additional tool to the UX personas and aimed to collect audience preferences on the specifications of a social media food related application. The questionnaire consisted of 11 questions, one of which was open-ended. From the 10 closed-ended questions, nine used a Likert scale from 1 to 5, where 1 expressed the minimum level of agreement with the question and 5 expressed the maximum level of agreement.

One of the 10 closed-questions used one choice answer statements, where the audience selected the answer that best represented their opinion. The open-ended question gave the audience the opportunity to freely right down their preferences and ideas about the application’s content. The questionnaire was purposefully created in Greek, in order for the participants to be able to express their ideas in the most accurate way. The results of the open-ended question where analyzed and gathered together in order for repeated answers to be recognized. The results that came back where from 96 participants, all within the target age range 25 to 44 years old. Table 3.3. demonstrates the questions and the available answers of the questionnaire.

**Table 3.3.** Questionnaire distributed about content preferences in a social media food related application.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Available answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Would you use a social media application (like Facebook and Instagram) concentrated on food content?</td>
<td>• Yes</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
<tr>
<td></td>
<td>• Maybe</td>
</tr>
<tr>
<td>2. Would you like a social media food application to have cooking recipes?</td>
<td>• Not at all</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------</td>
</tr>
</tbody>
</table>
| 3. Would you like a social media food application to have articles related to nutrition? | • Neutral  
• Yes  
• Very much |
| 4. Would you like a social media food application to inform you about food news (new restaurants, food events etc)? | • Not at all  
• No  
• Neutral  
• Yes  
• Very much |
| 5. Would you like a social media food application to have guides with restaurants and cafeterias in your region? | • Not at all  
• No  
• Neutral  
• Yes  
• Very much |
| 6. Would you like a social media food application to be interactive (you be able to upload recipes, to review restaurants, to interact with other users etc)? | • Not at all  
• No  
• Neutral  
• Yes  
• Very much |
| 7. Would you like to be able to find professionals like chefs and nutritionists through the social media food application? | • Not at all  
• No  
• Neutral  
• Yes  
• Very much |
| 8. Would you like to be able to find jobs in the food industry through the social media food application? | • Not at all  
• No  
• Neutral  
• Yes  
• Very much |
| 9. What else would you like to see in a social media food application like this? | • Not at all  
• Not so much  
• Somewhat  
• Useful  
• Very useful |
| 10. How useful would such a social media food application be for you? | • Rarely  
• Not often  
• Sometimes  
• Often  
• Very often |
As mentioned before, the questionnaire aimed to collect audience’s preference on the content of the social media food application. For this reason, the questions concentrated on the general content instead of the specifications, which were mainly covered by the qualitative research (see Appendix 2).

As mentioned above, quantitative research was complementary to the qualitative one. Both offered useful insights regarding audience preferences and needs, guiding the specifications decisions in the design process. What the questionnaire results revealed was a shift in healthy eating and healthy lifestyle in general, with many participants asking for healthy versions of deserts. This means that people are becoming more aware of what they eat, and they try to make healthier decisions when it comes to food.

Many answers to the open-ended question were about information and tips on healthy nutrition and exercise, while 67.7% of the participants said that they want to find nutritionists in the application. This enhances the conclusion about the shift in healthy eating and it also indicates that the application should provide information and education on nutrition. As the application will have a social media character, the demand for professionals and education will be covered from the social aspect itself. Professionals will be able to create a profile and become part of the community with content creation on food and nutrition. The same goes for chefs, who can provide cooking tips through their content.

Another important conclusion is that there is a demand for reviews and particularly for restaurant reviews. Furthermore, there is an interest in restaurant and cafeterias guides, as well as information about food news. Interactivity is also a trait that the participants asked for, and this adds to the initial idea of an interactive application where users can become creators. Last but not least, the need for
personalization is confirmed, as more and more people shift to different diets such as vegan and vegetarian. The personalization of the application needs to reach a deep level so that the user will be able to find exactly what they are looking for, with the least possible effort. Before the design of the application, it is necessary to create a list with the specifications of the end product, which will guide creation of the low fidelity prototypes.

3.5. Product Specifications

Specifications are the features of the product, which describe how the product behaves for the user and they guide the design decisions. Therefore, the creation of a features description is an important step before the design process. The specifications of the food application were created in accordance with the results of the qualitative and the quantitative research. Table 3.4 describes the specifications of the application, which were organized in relation to their prioritization level. The prioritization was made with the MoSCoW method, according to which there are four prioritization categories: Must have, Should have, Could have, and Won’t have (Ahmad et. al, 2017).

**Table 3.4 Product specifications.**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Prioritization</th>
</tr>
</thead>
<tbody>
<tr>
<td>• User profile (sign up and login)</td>
<td>Must</td>
</tr>
<tr>
<td>• Personalization questions about food preferences (sign up)</td>
<td></td>
</tr>
<tr>
<td>• Profile tools: save recipes, shopping list, meal planner, dietary goals,</td>
<td></td>
</tr>
<tr>
<td>dietary preferences</td>
<td></td>
</tr>
<tr>
<td>• Recipe filters: ingredients, time, cost, cook pads, ratings, calories,</td>
<td></td>
</tr>
<tr>
<td>season</td>
<td></td>
</tr>
<tr>
<td>• Recipe information: ingredients, time, calories, macronutrient, micronutrients, cost, servings, cook pads, diets, level, cuisines, goals,</td>
<td></td>
</tr>
</tbody>
</table>
| **allergens, stores, medical conditions, occasions** | **• Swap ingredients in recipes**  
**• Users can follow and be followed by other users**  
**• Recipe reviews**  
**• Recipes in story mode**  
**• Simple tools for creating aesthetic recipe stories** |
|**• How-to section (guides)**  
**• Restaurants and food stores**  
**• Order online**  
**• Videos and podcasts section**  
**• Profile tools: food stores**  
**• Choose when to see daily calories in the profile** | **Should** |
| **• Scanning food for calories, macronutrient, and micronutrient estimation**  
**• Global map for international cuisines**  
**• Restaurant meal calories** | **Could** |
| **• Job advertisements in the food industry** | **Won’t** |

The specifications listed in the “Must” section are very important and constitute the core of the product. Since the application will have a social media character, it must have a user profile with a “Login” and a “sign up” option. After signing up, the user will be invited to answer their personal nutrition preferences. This is also a necessary feature for the personalization of the information provided to the user.

Tools for recipes management will include a meal planner, shopping lists and saving recipes in custom meal categories. As far as recipes are concerned, they will provide information such as the ingredients, the calories, the required time, the cost, the cook pads needed, and the portions. Every recipe will also have its own cooking
level and it will fall into certain diet categories and medical conditions. Possible allergens will be mentioned, and the creator will also be able to insert food stores where the ingredients were purchased. When searching for recipes, the application will provide users with filters such as ingredients number, time, cost, cook pads number, ratings, calories, and season. Every user will be able to review a recipe by rating it with a five star evaluation scale. Recipes will be presented in a story mode where every story will be a separate step. Users can proceed to the next step or to the previous step by tapping on the right or the left side of the screen accordingly. The tools for creating recipes will be simple and will enable every user to create aesthetic content. The above specifications are the ones with the highest level of prioritization, as they serve the need for personalized, easy to follow recipes and they are necessary for the basic application function.

Proceeding to the next prioritization level, here are classified all the specifications that should be included for the optimized product function. Results from the targeted audience research showed that participants would like to get access to information regarding healthy nutrition, exercise, and cooking. As mentioned before, this will be covered from the nature of the social media application, which will allow different kind of content from different types of users. For example, chefs, nutritionists, or personal trainers can create their own content with tips and information on their specific field. For this particular kind of content there will be a separate section called “Guides”, which will provide informational content for a variety of topics.

In addition, research results indicate an audience preference on restaurant reviews and information. For this reason, a section for restaurants and food stores will be created, where users will be able to find information such as location, menus with
pricelists, products, and reviews. Online order will also be available for any store or restaurant that offers this option. Furthermore, the creation of videos and podcasts categories is also important because the popularity of these types of content is constantly increasing. By separating them in different categories the user will have instant access to what they prefer to consume.

Concerning the user profile tools, a food stores section should be included, where the user will save their preferred stores so that they can easily find them. The last specification in this section is a management tool, which will allow users to hide the calorie intake from their daily nutrition information. Taking into consideration the fact that calorie counting can be considered as an obsessive behavior around food and nutrition, this will allow users organize their meal plan without counting calories.

Moving on to the “Could” section, there are specifications that could be included if they provide value to the product and if there is enough time and resources. In this research, such specifications are a camera scanning tool for food nutrition information, a global map for international cuisines and a tool for estimating calories of restaurant meals. The camera scanning tool will be created, as it can be particularly useful for nutrition information of foods, and it can also serve as a tool for finding recipes with ingredients that are available at home. In addition, this tool will enable users to find stores with the scanned products. The global map will also be incorporated into the application as a fun tool that enables users to explore different cuisines from around the world. The tool for estimating restaurant meal calories will not be included because it is similar to the camera scanning tool, and it can be tested in restaurant scenarios too. The reason why the scanning tool for food ingredients is prioritized, is that the application emphasizes on personalized cooking recipes while the restaurants have more of a complementary role.
In the last section of the specifications, food job advertisements were decided not to be included because they do not closely correlate with main features of the application. There is no time or resources to invest for this feature and possible implementation would lead to the creation of a whole new functional needs that could constitute a different product. With the specifications of the application having been clarified, the design of the low fidelity prototypes can take place. The next chapter describes the design process, starting from the logo and the name of the application, proceeding to the wireframes and the chosen tools for the development phase.

3.6. Chapter summary

This chapter offers an examination of the Analysis of the multimedia production process. First of all, the initial idea was analyzed and a timeline for the process was created. Then, an examination of similar services followed, in order to find the key points for the creation of a novel product with a place in the market. Five recipe applications were analyzed, their specifications were investigated, and their advantages and disadvantages were listed. Following, the target audience was set, and preferences were collected through qualitative and quantitative research.
Chapter 4

Project design

4.1. Project Name and Logo

The first step of the design process was to find a name for the application. Since the niche of the application is food, it was decided that the word should be included in the name. Other words like “recipe” or “cooking” were declined because the application features go beyond cooking recipes and expand to various different tools and aspects around food. The second word of the name was decided to be “Stories” for a number of reasons. First of all, the main concept of the recipe presentation is in a story mode, just like stories on Instagram. The similarity here serves a basic rule of branding, which is familiarity, as users tend to recognize and accept more easily concepts that are familiar to them. Instagram stories are particularly popular around the world with billions of users creating their own ones.

Besides the recipes’ story mode, the word “story” expresses the personal story of every user around food and the fact that everyone can easily make and share their creative stories with the rest of the world. Food Stories is destined for making every user a valuable part of a food community, where everyone can become the creator of their personal stories.

As far as the logo is concerned, it consists of a chef hut with a heart upon it, inside a circle (Figure 4.1). The chef hut represents the food and the heart refers to the “like” button of a social media application. The circle is derived from the Instagram stories, which are presented in a circle at the top of the mobile screen. The circle in the logo also facilitates user familiarity.
4.2 Low fidelity prototypes

The next phase of the designing process was the creation of the low fidelity prototypes. The goal of this step is to create an initial visualization of the product’s features and functionality. Low fidelity prototypes are also known as wireframes, and they are created freehand on a paper without design details. Wireframing is a necessary process that prevents future faults by allowing designers to define the general layout and the functional elements of the screens before proceeding with the aesthetic details. The prototypes that were created were 31 and concerned the basic screens of the application. As seen in Figure 4.2., the first screen that was created is the main screen of the application with the logo, a photo and two buttons, the “sign up” and the “login” button.

The second wireframe is the “sign up” screen, which has a “sign up” button at the center and the user’s information for signing up at the top of the screen. At the bottom of the screen there are the options for proceeding by signing in with Facebook, Instagram, or Google account (Figure 4.3.).
The next screen is the login page, where again the “Login” button is at the center of the page. Above it there is an email and a password field and at the bottom of the page there are the options for logging in with the same accounts that were mentioned to the previous screen (Figure 4.4.).
Figure 4.4. Wireframe of the login page of the application.

As seen in the sign up and login wireframes, the layout is consistent with the action buttons located at the center of the screen, the user’s information at the top and the alternative accounts at the bottom of the screen. After the sign up and login screens, the user is asked if they want to answer a few nutrition preferences questions (Figure 4.5.). The purpose of this screen is to welcome the user and help them proceed smoothly to the questions in order to prevent them from feeling intruded. The user has the option to skip the questions and set the preferences later from their profile. At the top of the screen there is a photo and at the bottom of the screen there are the home page buttons, which will be explained later on this research.
Proceeding to the nutrition preference questions, the first question is about the cooking skills of the user (Figure 4.6.). Same as the previous screen, there is a photo at the top, the question underneath, and the options at the center. Each option is accompanied by elements that represent it and at the bottom of the screen there is a button “Next”, which proceeds the users to the next question. The cooking levels available are three: the beginner, the intermediate and the advanced. It is an important question because every recipe in Food Stories has a cooking level label, which helps users find recipes that match their skills.
The next wireframe depicts the question about the user’s cooking goals (Figure 4.7.). The layout is the same, with the extra button “Back” at the bottom, which takes the user back to the precious question. The options in this question are six and the user can select more than one answer because someone may have two or more goals at the same time. For example, someone who eats healthy may want to save time or money as well. This question is also very important as it personalizes the user’s goals in order to show them recipes and restaurants or food stores that serve these goals.
The third question is about the diet that the user follows. As seen in Figure 4.8., the diet options available are nine: regular diet with no restrictions, vegetarian, pescatarian, vegan, paleo, ketogenic, low carb, low fodmap and gluten free. These are the most well-known diet categories today, and they cover the biggest spectrum of diet variations. In this screen users can select one diet.
The possible food categories that these diets do not cover are defined through the next screen (Figure 4.9.), which asks about food allergies. The food allergies have six categories: gluten free, wheat free, dairy free, soy free, nuts free and seafood free. Users can select more than one category. Through this process, a user that follows a low Fodmap diet and also eats gluten free foods, can select the gluten free option in the allergies question.
The personalization goes to an even deeper level with the next two questions about liked and disliked ingredients. Figure 4.10. demonstrates the question about disliked ingredients. There is a search bar at the center of the screen, where users can search to find any food item they do not like and they do not want to see in their recipes.
In the same way, the next question answers about loved ingredients that the user wishes to see often. The layout is the same, with the search bar at the center of the screen (Figure 4.11.).
The last question on personal preferences is about user’s favorite cuisines. The wireframe seen in Figure 4.12. reveals a slightly different layout from the previous ones. The cuisines are displayed at the center of the screen in a group of three options and there is an arrow at the right side, which takes the user to the next group of three options. This was decided because the cuisines are 15 in total, and they cannot be displayed in one screen. The user can select as many cuisines as they want.
After the preference questions, the user is ready to set up their profile. As seen in Figure 4.13, at the top of the screen there is the profile picture with the name and the username. At the right side there are two buttons, the profile specifications button, and the story button. The profile specifications button leads to the personal preferences and the tools that the application offers regarding recipes and food organization, as well as the profile settings. The story button enables users to create simple stories in the same way that Instagram stories work. These stories will be displayed at the top of the home page, they will last for 24 hours, and they will be
visible between users that follow each other. At the left side of the screen there is a chef’s hat which serves as a shortcut for the user’s saved recipes.

Figure 4.13. Wireframe of the user profile.

Under the profile picture there are the followers number, the reviews, and the number of people that the user follows. There is also an “Edit profile” button and other social media applications that the user has. At the bottom of the screen there is a home page button, a search button, an upload button, a shops button, and the profile button. The home page button leads to the page with all the posts of the people that the user follows. The search button leads to a page where the user can explore anything around food. From the upload button at the center, the user creates posts. The shops button leads directly to a page with restaurants, supermarkets, and shops with biological products. The tools available in the profile specifications page are the
user’s saved recipes, the meals diary, the shopping list, user’s goals and dietary preferences, saved stores, drafts, reviews, statistics, activity, and settings.

Moving on to the home page of the application, this includes posts from all the profiles that the user follows. As seen in Figure 4.15., there is a message button at the top of the screen along with a notification button. At the left side of the screen there is the logo with the name of the application.
Next to the home button there is the search button, which leads to the search page. The search page (Figure 4.16.) consists of recipe posts that are relative to the user’s preferences and come from profiles that the user do not follow.
Here the recipe photos are smaller so that the user can see more of them, opposed to the home page posts that are fewer and bigger. At the top of the screen there is a search bar and to the the side there is the camera scanning tool. To the right side there is an earth icon which leads to the 360° earth element for the international cuisine exploration. At the bottom of the screen there is a filters button for the recipes. As mentioned to the specifications analysis, the filters concern the recipe’s ingredients, time, cost, cook pads, ratings, calories, and season. Proceeding to the camera scanning tool, when the user touches it, they will see the screen in Figure 4.17. At the top of the screen there is an exit button and below it there is a photo. In the middle there is a scanning element which opens the camera for the user to scan the
ingredients. At the bottom of the screen there is an explanatory text that helps users understand what the scanning tool does.

Figure 4.17. Wireframe of camera scanning tool.

Figure 4.18. depicts the 360° earth element where the user can pick any country and explore its national cuisine.
Proceeding to the recipe upload, the user touches the plus button which leads to the screen depicted in Figure 4.19. Every recipe has a cover and then the content follows in steps. The frame in the middle of the screen is where the photo of the cover or the content is placed. To the left side of the bottom of the screen there is a square button which opens the user’s photo album and to the right side there is a camera button which opens the smartphone camera. There is also an exit button at the top of the screen.
When the photo album opens, the user can select as many photos as they want and upload them to the recipe (Figure 4.20.). The user can select between recent photos and albums in order to find the photo that they want to upload and then they touch the “import” button.
After uploading the photos, the user gets to the screen that is wireframed in Figure 4.21. At the bottom there are the uploaded photos and at the center there is the frame where the chosen photo appears. The user can still upload more photos from the photo album icon or open the smartphone camera to take a photo and upload it. In this stage there is still the option to chose between cover or content of the recipe and as soon as the desired photo is chosen the user has to touch the “done” button in order to proceed. In case the user wants to leave the process there is also an exit button.
The next step is the editing photo screen (Figure 4.22.), where there are basic tools for creating an aesthetic story. The tools include audio insert, call to action buttons, text, filters, color adjustments, background editing and shapes. There is also a tool called “recipe overview”, where the user can insert all the recipe information like the ingredients, the time and the nutrition value. As seen in the wireframe, there is an arrow that leads back to the screen with all the uploaded photos in case the user wants to insert a different photo. At the top right side of the screen there is a “draft” button that sends the recipe to the drafts section of the user’s profile. Below it there is an “add media” button, which enables users to add extra media from their smartphone library on top of the inserted photo. The three dots to the left side of the screen open a menu with two options: copy the style of the edited story and create a template. The “plus” button leads the user to the next step of the recipe where the same process of
selecting a photo and editing it takes place, until all the scenes of the story are completed.

Figure 4.22. Wireframe of selected photo editing screen.

Besides the tools, the application will provide users with ready cover templates to choose from. An important step of the recipe is the “overview” tool, which is where the recipe information is inserted. This information function with the form of labels that classify the recipe in certain categories. According to these labels the recipe becomes personalized, and it is shown to the right users. The labels are seen
In Figure 4.23, and they include ingredients, time, calories, macronutrients, micronutrients, cost, servings, cook pads, level, cuisine, goals, allergens, stores, medical conditions and occasions.

In order to insert an ingredient, the user selects the “ingredients” button and proceeds to a screen with a search bar (Figure 4.24.). The user can either search for
the desired ingredient or create a custom one. There is also the option of scanning a product barcode to automatically insert the ingredient. This can be done from the barcode icon at the right side of the search bar.

Figure 4.24. Wireframe of ingredients overview screen.
When the search bar is used, all the relevant products that match the user’s search are shown (Figure 4.25.). For example, if the user searches for milk, all the available milks from the application’s database will show up. For this feature it is important to mention that the database will automatically be informed by every single user’s ingredient import. This is the power of social media, where every user contributes to a application’s functions. In this way, every user from any part of the world will be able to have access to a big amount of data and find exactly what they are looking for.

Figure 4.25. Wireframe of ingredients search screen.
As seen in Figure 4.25., the user can select between “all” products, “my foods” and “branded” products in order to search for ingredients. The photos in the wireframe represent the products and the “plus” button opens the specific ingredient details. The product details include macronutrient and micronutrient information, as well as portion and calories (Figure 4.26.). The portion can be modified by the user and the calories change accordingly.

Figure 4.26. Wireframe of ingredient details screen.
The “done” button at the right top of the screen inserts the ingredient in the recipe (Figure 4.27.). The amount of the ingredient can be changed by the button next to the amount and the user can delete the ingredient any time by dragging the ingredient bar left. The “Add swap ingredient” button underneath enables the user to add an alternative ingredient to the recipe. The “Add ingredient” button is used to add the next ingredient. When all the ingredients are inserted, the user selects the “done” button and is taken back to the recipe overview to proceed with the rest of the recipe information (Figure 4.23).

Figure 4.27. Wireframe of inserted ingredient screen.
After having analyzed how the user will upload a recipe, it is time to proceed to how a recipe will be viewed by other users. As mentioned before, recipes will be presented in a story mode, with each story consisting a separate step. Figure 4.28. shows what the user will see when they select a recipe from the home, search page, or a user's profile. The cover of the recipe depends on the personal aesthetic style of the creator. As seen in the wireframe, the cover of the recipe takes up the whole mobile screen. The “recipe” word represents the title of the recipe and there is a call to action button with the word “start”. When the user taps the action button the recipe starts with proceeding to step one. Under the “start” button there is the recipe overview, which provides all the necessary information about the recipe (Figure 4.29.).
Figure 4.29. Wireframe of recipe overview screen.

The overview provides information about the ingredients number, the calories, the time needed and the portions. Under this basic information there are more details concerning the cost, the cooking skills needed, the cuisine, the diets, the goals, and analytical nutrition value. There is also a list with the ingredients, which can be added to the shopping list by tapping the “plus button” beside them. Last but not least, the reviews that the recipe has received are displayed. Figure 4.30. depicts the steps of the recipe. Users can proceed to the next step by tapping to the right side of the screen and they can go back by tapping to the left side of the screen. If the recipe is in a
video form, the story plays repeatedly, until the user taps the screen to proceed. The content of the recipe steps depends on the creator. The “exit” button takes the user back to the screen where the recipe was found.

Figure 4.30. Wireframes of recipe steps screens.

The last screen of the recipe provides the user with tools like sharing it, saving it, and placing it to their meal planner (Figure 4.31). The tools mentioned can be seen to the left side of the bottom of the screen, with the same order. From this screen the user can also review the recipe, comment, and like it. The “exit” button takes the user back to the screen where the recipe was found. After the presentation of the main screens of the application through the low fidelity prototypes, the next step is to select the right tools for the implementation of the project.
4.3. Designing tools

For the creation of the high fidelity prototypes, it is important to choose the right software tools. The tools that were used for the implementation of the project were two: Canva and Invision Studio. As mentioned before, Canva is a free graphic design application with easy design tools, which enable users with no relevant expertise to create graphic design material. Canva was used to design the screens of the application with all the aesthetic details. In the process of creating a project in Canva, the user has to choose their canvas’s dimensions according to what they want to design. Screens of Food Stories were designed using an Instagram story template that the website offers (Figure 4.32.). The design interface provides many design tools
such as graphics, shapes, photos, text, and videos. In the free version, most of the design elements are protected with watermarks, so for the purpose of this research a monthly subscription was purchased. Invision Studio was used for the creation of the prototypes.

Invision Studio (https://www.invisionapp.com/studio) is a prototyping and animation cloud based tool which operates on Mac and Windows. Invision gives users the ability to share their work with other members and get feedback in real time, while it also offers tools like “Freehand” and “Board”. Freehand tool is used for the creation of wireframes and workflows, while board tool is used for ideation in the early process of a project. The prototypes of Food Stories were created in iPhone 8 artboards by placing the Canva screens and creating interactions between them (Figure 4.33.)

Figure 4.32. Canva design interface of Food Stories screens.
4.4. Chapter summary

Concluding, this chapter provides a detailed presentation of the design phase of Food Stories application. First the name selection and the logo creation were analyzed. Then the low fidelity prototypes were presented, and the design decisions were explained in detail. The low fidelity prototypes have set the base for the creation of the high fidelity prototypes that will be presented in the next chapter. Lastly, in this chapter the selected tools for the development of the application were presented. The first tool is Canva, in which the mockups were created and the second one is Invision Studio, where the interactions between the screen were set.
Chapter 5

Project development

5.1. Creation of mockups

The development of Food Stories project started with the creation of the screens in Canva. The screens with all the aesthetic details and graphic elements are called mockups. Mockups are created based on the wireframes and they are one step before the creation of prototypes, which insert the component of interaction. The design process started with decisions regarding the colors of the application.

When trying to decide what color to give to a food application, one has to consider many aspects of color psychology and how it can affect users. Similarly to a web color design, an application’s color design can affect how much time the user spends on the application and whether the application emits trust or not (Guo et al., 2019; Skulmowski et al., 2016). Skulmowski and his colleagues (2016) made an experiment on how color saturation can influence trustworthiness and perceived usability of a website. They found that less saturated colors rated higher in trustworthiness and had an effect on perceived usability depending on the website’s content domain. Contrary to previous studies they found that color saturation does not affect visual appeal of a website (p. 393).

Regarding visual appeal, it is not only the design that matters. Seckler and his colleagues (2015) found that the structure of a website affects visual appeal much more than its design and colors. Their experiment results indicate that well-structured websites with symmetrical elements receive higher visual appeal ratings along with some other color aspects such as medium or high saturation, blue hue, and medium brightness. The above suggest that when investigating a websites’ impression, one should consider multiple factors such as its structure, ease of use, interaction, speed,
content organization and usefulness, uniqueness, graphics, and overall design (Cebi, 2013). According to the mentioned researches, it was decided to put emphasis on the application’s structure and in color details that would facilitate functionality. The background of the application is white, which is clean and simple, making every element stand out easily. The primary color is coral red (Figure 5.1.) and the secondary color is peach, both being found in the application’s logo.

Figure 5.1. Color selection for the application’s main elements.
The coral color was chosen as the primary color because it is both stimulating and soothing. Coral is a combination of orange, pink and red and it is a color that belongs to the worm hues of the color spectrum. It is a color known as friendly, open, and positive and it is considered a safe web color choice. Coral combines well with other warm colors such as yellow and peach, which is the secondary color of the application. The white background along with the warm colors picked for the application serve the simple and sophisticated design, yet with playful and vigorous vibes, which invite the user to discover a new world of food. The first screen is the main page, which introduces the user to the application’s niche (Figure 5.2.).

Figure 5.2. Main screen of the application.
A clean white photo with food content was chosen for the background and at the top of the screen there is the application’s name with the logo. The design is human-centered and intends to make the user feel unique. Under the “Food Stories” name there is a complementary phrase “Write yours today”, which invites the user to write their own story. At the bottom of the screen there is the phrase “You are unique. So is the way you eat”. This phrase promotes the uniqueness of each user and indicates that the application offers personalized food content. At this stage, it was decided to add a few more welcoming screens that explain what the application offers. By dragging up the main screen, a second screen is revealed (Figure 5.3.).

Figure 5.3. First welcoming/registration screen of the application.
This screen plays a video at the top and explains the global character of the platform. At the bottom of the screen there are five grey and one peach circle, which suggest that there are four more welcoming screens. Under the circles there are the “sign up” and “login” buttons. The color of the “sign up” button is coral and the color of the “login” button is white. This was intentionally made in order to emphasize on the sign up process for new users. The letters of the “sign up” button are white so that they are easily visible through the contrast that they make with the coral background. Since the “login” button is white, the letters are black. It is up to the user whether they want to view the rest of the welcoming screens or proceed to registration. By dragging the screen to the left, the second welcoming screen is revealed (Figure 5.4.).

![Second welcoming/registration screen of the application.](image)

Figure 5.4. Second welcoming/registration screen of the application.
This screen also plays a video with a content creator and the text underneath invites the user to spread their ideas around food and share them with the rest of the world. The second circle in this screen is peach, letting the user know that there are three more screens. Same as the previous screen, at the bottom there are the “sign up” and “login” buttons. The next welcoming screen is depicted in Figure 5.5.

![Figure 5.5. Third welcoming/registration screen of the application.](image)

Here the user can watch a woman preparing a pizza and the text underneath invites them to explore their personalized recipes. Dragging left to the next screen (Figure 5.6.), there is a video of a woman cooking a recipe while watching her tablet.
The text introduces the story mode of the recipes and describes the comfort of cooking with instructions at a personal pace. The last welcoming screen (Figure 5.7.) is similar to the main screen of the application and its purpose is to close this explanatory introduction smoothly. The whole purpose of the welcoming screens is to present the basic features of the application and make the user feel at the center of attention. At the same time, the user can proceed to the registration whenever they want to, without having to navigate through all the welcoming screens.
The “sign up” button leads to the sign up screen, where the user enters their name email and password. Instead of registering the user can proceed with their Facebook, Instagram or Google account (Figure 5.8.). Before signing up the user has to agree with the terms and conditions of the application by checking the according field. The login screen (Figure 5.9.) requires the user’s email and password, which there is an option to retrieve in case it is lost. In this screen there is also the option of proceeding with Facebook, Instagram or Google account.
After the sign up screen, the user is introduced to the personal preferences questions. As seen in Figure 5.10., the user is greeted with their first name for intimacy purposes and there is an explanatory text for the questions. Under the text there are two options, the “Let’s go” button which proceeds the user to the questions and the “Later” button which skips the questions and leads the user to their profile. At the bottom of the screen there are the application’s main screens starting from the home page at the left, the search page, the button for content creation, the shops screen and the user profile.
Figures 5.11. and 5.12. depict the cooking skills and the cooking goals questions. As mentioned in the previous chapter, in the question about the cooking skills the user can select one answer between “Beginner”, “Intermediate” and “Advanced”. In the question about the cooking goals the user can select more than one answers. The “next” button proceeds to the next question and the “back” button goes back to the previous question in case the user wants to make any changes.
The next two questions are about the user’s diet (Figure 5.13.) and possible food allergies (Figure 5.14.). The user can select one type of diet and more than one food allergies.
Proceeding to the next question, this one is about disliked ingredients that the user wants to be excluded from their recommended recipes (Figure 5.15.). The user can search any ingredient from the search bar and insert it by choosing the plus button beside them. In Figure 5.16. the “cheese” search opens up an option of different cheeses to select from.
The user can insert as many disliked ingredients as they want. By choosing the plus button, the ingredient gets inserted and a “Done” button shows up on the menu (Figure 5.17.). By choosing “Done” the ingredients get inserted and are displayed side by side with the option “Remove” under them (Figure 5.18.).
In the same way users can insert ingredients that they eat often and want to see in their recommended recipes. Figure 5.19. depicts the screen with the question about loved ingredients and the search bar. The steps for inserting an ingredient are the same as the ones demonstrated in Figures 5.16., 5.17. and 5.18.
Figure 5.19. Insert favorite ingredients.

The last question is about the user’s favorite cuisines. As explained in the design of the low fidelity prototypes, the cuisines’ presentation is different from the previous elements because there are 15 different cuisines. Using the arrows enables navigation through the different cuisines screens and the user can select as many cuisines as they want.
Figure 5.20. Favorite cuisines question.
After having answered all the questions, the user gets directed to their profile (Figure 5.21). As described to the design chapter, there is a profile photo, a name and a username. The icon with the three dots in the circle is where all the profile tools are gathered, and the plus icon creates the 24 hour stories. The chef’s hat to the left side of the screen is a shortcut for the saved recipes, which can be found in the profile tools. At the bottom there are the main screens of the application.

Figure 5.21. User profile.
In the edit profile section (Figure 5.22.), the user can set the name and the username, write a biography and post a 30 seconds video story (Figure 5.23.). There are also fields for inserting other social media accounts as well as a webpage. Furthermore, the user can set contact information and their profile preview.

Figure 5.22. Edit profile.

Figure 5.23. User story video.
The contact information field (Figure 5.24.) is particularly useful for business accounts or users that want to promote their business through their profile. The information include an email, a telephone number, a mobile phone and address details. There is also a map where the user can insert their exact location. From the profile preview (Figure 5.25.) the user can choose if their biography, story video and contact information are visible from other users. This can be set by activating and deactivating the bar icon next to each field.
Moving on to the profile specifications screen (Figure 5.26.), here the user can find all the tools for managing their nutrition, recipes and profile settings. The recipes section (Figure 5.27.) is where the user can save their favorite recipes into categories. The “Add collection” button enables the user to create a custom category. Figure 5.28. demonstrates two recipes saved in the breakfasts category.
The meals diary (Figure 5.29.) is a monthly diary where the user can insert recipes in any day of the month and track their calories and overall daily nutrition. As seen in Figure 5.30., the recipes can be inserted into categories and underneath them there is a calorie bar and a daily nutrition button. The calorie nutrition bar can be hidden by using the eye icon, in case the user do not want to see how many calories they eat (Figure 5.31.).
When the user saves a recipe in a category of the daily diary, they can also add custom foods in order to be able to track everything they eat. This is important so that the daily calorie and nutrition value are accurate (Figure 5.32.).
In the shopping list section the user can save ingredients from the recipes and either use it to buy them from the supermarket or order them online. As seen in Figure 5.33., the ingredients can be removed from the shopping list one by one, or by using the button “remove all from shopping list”. There is also an “add to list” button that enables custom ingredients insertion.
Moving on to the “Goals” section of the profile specifications, this is where the user’s cooking goals from the initial preferences questions are saved. The user can change them anytime from this section of the profile specifications. Next is the “Dietary preferences” section where all the dietary answers from the preferences questions are saved. These can also be changed at any time. In the “Stores” section that follows, the user can save their favorite stores in order to be able to easily find them. The “Drafts” section is where the user can find all the drafts from content that was not uploaded. “Reviews” demonstrate all the reviews that the user’s content has received, and “Statistics” show analytical numbers about followers and posts.
variations in a certain period of time. “Activity” section demonstrates information about the amount of time spent on the application and about interaction with other users and posts. Finally, from “Settings” the user can manage things like profile privacy, payment methods and contact with administrators for help. Moving on to the home page of the application, here there are all the posts from the profiles that the user follows (Figure 5.34.).

Figure 5.34. Home screen of the application.
As seen in the Figure above, the user can see the recipe’s reviews, likes and comments, as well as the profile that posted them. On the right side at the top of the screen there are the notifications and the message buttons. Right beside the home page button, there is the search button which leads to the search screen (Figure 5.35.).

Figure 5.35. Search screen of the application.
As explained in the design chapter, the search screen includes recommended posts from profiles that the user does not follow. Through this screen the user can explore new profiles and follow them. In the search screen there are also a “Podcasts”, a “Videos” and a “Guides” section that have already been analyzed in the previous chapter. At the bottom of the screen there is a “Filters” button which opens up a filters screen (Figure 5.36.).

![Figure 5.36. Recipe filters screen of the application.](image)
The available filters concern the ingredients, the time, the cost, the cookpads, the ratings, the calories and the season of the recipe. The user can set their preferred filters and choose the done button to Insert them. The search page shows the according to the filters results. For structural purposes of this research, the content creation button will be analyzed at the end of the main application’s screens. Moving on to the shops screen, here there are three categories of shops: supermarkets, shops with biological products and restaurants (Figure 5.37).

Figure 5.37. Shops screen of the application.
The user can search for any shops and find details about products and location or order online if the store allows it. Moreover, users can search for restaurants and get informed about menus and prices, as well as location and contact details. The shops and restaurants that show up in this section are recommended based on the user’s preferences. Moving on to the circle button at the right side of the main screens’ menu, this leads to the user’s profile that has already been demonstrated. The last button of the main screens is the content creation button. This button leads to a screen where the user can upload photos or videos from the smartphone library or use the camera to take a photo and upload it (Figure 5.38.).

Figure 5.38. Content creation main screen.
There is also the option to choose between the creation of the cover or the content. The cover is the initial image of the post, the one that every other user sees before tapping to see the content of the post. The recipe cover creation interface offers a number of templates for the user to select as seen in Figure 5.39. The user can see the next template by dragging the screen to the left and go to the previous one by dragging to the right.

Figure 5.39. Recipe cover templates.
The library icon leads to the recent smartphone photos (Figure 5.40.). As seen in Figure 5.41., the user can select the photos that they want to upload to the recipe creation interface.

Figure 5.40. Smartphone photo library.  
Figure 5.41. Selected photos for recipe creation interface.

The “Import” button uploads the images to the interface as seen in Figure 5.42. the user can see all the photos that have uploaded by dragging the photos to the left.
After having uploaded the photos, the user selects the photo that they want for the cover of the recipe, which can be applied to the templates. Figure 5.43 demonstrates the selected photo with no template and Figure 5.44 shows the same photo with a template. As described before, the templates can be applied in a row by dragging the photo to the left.
Once the user selects the cover photo, they touch the “done” button to the right side at the top of the screen. This leads to the editing tools screen as seen in Figure 5.45. In the Figure, the cover photo has been selected with the template demonstrated in Figure 5.44. At the top of the screen there is the word “Cover”, which shows that the user is editing the cover of the recipe. Under the photo there is a number of editing tools. First there is the recipe overview, which is where all the recipe information is inserted. Then there is the “text” tool, which adds text to the cover. After the “text” tool there is the “background” tool, which paints the background with different color options. The “shapes” tool that comes right after, adds different shapes to the cover.
For example the user can add a circle or a triangle. The “adjustment” tool adjusts the lighting of the colors, such as the brightness and the saturation. Next to it there is the “filters” tool, which adds pre-designed filters to the cover. After the “filters” tool the user can find the “audio” tool, which adds audio either from the user’s smartphone library or from tracks that the interface offers. By dragging the tools left, the two last tools are revealed: the “call to action” tool and the “tag” tool. The first one adds “call to action” buttons that lead to certain actions when used. The last one enables the user to add other users or business profiles to the recipe.

Figure 5.45. Cover editing tools.
In order to proceed to the content of the recipe the user selects the “plus” button next to the edited cover and a content screen shows up. The same tools are available for editing the content of the recipe, except the “recipe overview” tool that only applies to the cover of the recipe. Figure 5.4 demonstrates the photo selection for the content and the editing tools. The rest of the content is created with the same process by using the “plus” button at the right side of the screen.

Figure 5.46. Content editing tools.

The last recipe creation screen that is going to be analyzied is the “recipe overview” tool. As mentioned before, this tool enables the user to insert all the necessary information about the recipe. Figure 5.47 demonstrates the recipe overview screen.
The information that can be inserted in the recipe overview is predetermined by the tool and it has already been analyzed in the design chapter of this research. One of the most important information is the recipe’s ingredients because they make the recipe suitable for some users and not suitable for others and they also determine the calories and the overall nutrition of the recipe. The way that the ingredients get inserted has already been analyzed in the previous chapter. By selecting the
“Ingredients” tool in the recipe overview, a search screen appears (Figure 5.48.). Under the search field there is an explanatory text to help the user understand how they can insert an ingredient. The scanning icon next to the search box enables the user to scan a food item and automatically insert it in the ingredients list. There is also the option to create a custom food with all the necessary information like name, calories, macronutrient and micronutrient values inserted by the user.

Figure 5.48. Recipe ingredient search screen.
As seen in Figure 5.49., the user can search for milk and all the available food items that match the search show up. Figure 5.50. depicts a search for almond milk and the category “Branded” is chosen. The database shows specific results about branded almond milks.

The user can also search for a specific brand and the database will show all the relevant results (Figure 5.51.).
The “plus” icon next to the food item opens a screen with all the details of it (Figure 5.52.). There is the amount of the food item, the calories, the macronutrients (protein, carbohydrates and fat) and a micronutrient analysis (vitamins and minerals). The amount of the ingredient can be modified by using the arrow in the amount box (Figure 5.53.). The user can choose between grams, milligrams, cups, tablespoons,
and teaspoons and select “Done”. The number before them can also change in order to set the right amount. The shopping cart icon next to the food item enables the user to insert the shop where this specific ingredient was bought.

Figure 5.52. Milk food item details.  
Figure 5.53. Milk food item amount setting.
When the right amount is set, all the nutrition values automatically change to match the quantity of the ingredient (Figure 5.54. and 5.55.).

Figure 5.54. Change amount of food.                      Figure 5.55. Nutritional value of food changed.

The “done” icon at the right side of the top of the screen inserts the food item in the ingredients list (Figure 5.55.). The food item can be edited from the editing icon next to it or deleted by dragging it to the left (Figure 5.57.).
Figure 5.56. Food inserted to ingredients list.

Figure 5.57. Delete inserted food from ingredients list.
Under the food item there is a “swap ingredient” tool where the user can insert alternative ingredients that can be used instead. The alternative ingredient is inserted in the same way as the initial one and it is shown in the recipe overview. Under the swap tool there is a plus icon which is used for inserting the next ingredient of the list. After the analysis of the recipe creation, the screens of the recipe presentation are going to be presented. As seen in Figure 5.58, the recipe has a cover with a “Start” button and an overview arrow.
The “Start” button is a call to action button which starts the recipe steps. The overview arrow opens up the recipe overview screen with all the information about it (Figure 5.59.). The ingredients can be inserted in a shopping list by choosing the “plus” button besides them and at the bottom of the screen there are the recipe’s reviews. The user can go back to the recipe cover by choosing the “exit” icon at the top of the screen.

Figure 5.59. Recipe overview screen.
The “Start” button leads the user to the first step of the recipe. The user can proceed to the next steps by touching the right side of the screen. Touching the left side of the screen takes the user back to the previous step. Figure 5.60. demonstrates the four steps of the recipe. The user can exit the recipe at any time by touching the “exit” icon at the top of the screen.

![Recipe Steps](image)

Figure 5.60. Recipe steps.

The last screen of the recipe is presented in Figure 5.61. At the left side of bottom of the screen there is a forward icon, a save icon and a tool for adding the recipe in the meals diary. At the right side of the screen there is a review, a comment and a like icon. The recipe closes with the “exit” icon at the top of the screen.
The next tool of the application that is going to be analyzed is the camera scanning tool. As described in the design chapter, this tool enables users to scan food items with the smartphone camera and analyze their nutrition, search for recipes or find shops to purchase them. The scan icon that can be found at the top of the main screens of the application (Figure 5.62.), leads to an introductory screen of the tool (Figure 5.63.). The text explains how the tool can be used. The camera icon at the
center of the screen opens the smartphone camera and a menu with “Search”, “Photo” and “Barcode” buttons (Figure 5.64).

Figure 5.62. Search screen with camera scanning tool.
The “Photo” button at the center of the screen takes the photo. The “Search” button enables the user to search for food items instead of using the camera and the “Barcode” button scans a product’s barcode. As soon as the photo is taken, the interface locks the food items and suggests food items that it recognizes (Figure 5.65.). Under the scanned foods there is a “Find recipes” icon and next to it there are two more icons: the “Estimate Nutrition” icon to the left and the “Find shops” icon to the right. These icons let the user know which function is activated. In order to insert a food item the user has to touch one of the locked foods and the interface suggests
the matching name of the food. As seen in Figure 5.66., when the locked milk of the photo is chosen, the interface suggests the word “milk” while offering the option to search for another food name. This is in case that the interface does not recognize the food item correctly.

Figure 5.65. Camera scanning tool. Scanned food items.

Figure 5.66. Insert food item.
The “milk” button opens up a menu of different milks and the user can select the right one from the “plus” icon next to them (Figure 5.67.). After choosing the type of milk, there is a screen for inserting the amount of milk (Figure 5.68.). This is very useful when searching for recipes to make with ingredients that are already available at home. The amount of milk can be changed by the arrow inside the amount button. The “Add food” button adds the milk to the search list. Figure 5.69. and 5.70. demonstrate the tools for changing the amount of milk.

Figure 5.67. Food item options.  
Figure 5.68. Insert amount of food item.
The user can go back with the “back” arrow or set the desired amount with the “done” icon. This leads to the next screen, where the milk is inserted, and the user can touch the “Search button” in order to search for recipes with milk (Figure 5.71.). Alternatively, the user can proceed with adding more foods to the search list by choosing the “Add ingredient” button.
In order to find shops with the inserted food items, the user has to activate the “Find shops” icon, which is next to the “Find recipes” icon as described before. This can be done by dragging the “Find recipes” icon to the left (Figure 5.73.). The “Search” button leads to the location access permission as seen in Figure 5.74.
By selecting one of the three options the user can proceed to the shops search results (Figure 5.75.).
Finally, the “Estimate nutrition” icon activates the nutrition search for the food item (Figure 5.76.). Figure 5.77. shows the estimated nutrition of one cup of milk. Here the user can also add the food item to the meals diary if they plan to eat it.
The last tool of the application that is going to be analyzed is the international cuisine tool (Figure 5.78.). This tool is used from the earth icon to the right side at the top of the screen. The earth is a 360° element and the text above it explains how the tool is used. The user can search for any country of the world by dragging their finger on the earth and choose a country in order to see its traditional recipes.
Figure 5.78. International cuisine 360° earth element.
5.2. Creation of high fidelity prototypes

After the creation of mockups in Canva, the creation of prototypes took place in Invision Studio. The process that was followed was the creation of iphone 8 artboards where the Canva mockups were inserted. Then from the design tools (Figure 5.79.), rectangles were inserted to all the interactive elements of the screens. The opacity of the rectangles were brought down to zero so that they are not visible. A trigger was set for every rectangle, as well as the artboard that will navigate to, when the interaction that takes place (Figure 5.80.). With this process all the interactions between the artboards were set.

Figure 5.79. Invision studio. Design tools.

Figure 5.80. Invision studio. Design and interaction tools.

Figure 5.81. demonstrates the Invision Studio interface of the prototypes.
Overall, this chapter explained the creation process of the high fidelity prototypes. The screens made in Canva were presented with details about their functions. Every interactive element was analyzed, and all the tools of the application were described. Finally, the Invision Studio tools that were used for the creation of interactivity were also presented.
Chapter 6

Project evaluation

6.1. Qualitative evaluation

The qualitative evaluation of Food Stories included two user studies (Table 6.1). The first user study resulted in proposed improvements regarding the functionality, the aesthetics and the information of the application. The first version of the application was tested by two experts in multimedia production and the second version was tested by nine participants within the target age group.

The users in the second study were shown the second version of Food Stories and the study led to some conclusions about the usability of the application. Participants were very satisfied with the application’s general use. There was satisfaction with the personalization level and the recipe tools. The international cuisine tool caught the interest of the users and one of them stated that it is the best tool of the application. Initially, there was a level of frustration from most of the users because not all the interaction of the application were activated. Once users got directions about how to navigate with the available interactions, they learned quickly and were able to navigate effectively. Regarding the functionality of the application, one of the users stated that the ingredients in the recipe creation should be more visible. Almost all of the users stated that they would like to be able to select more than one answer in the preference questions. One of them said that it would be better if the recipe creation process was complete. Regarding the aesthetics, all users were completely satisfied, except one user which stated that sometimes the stimulation is overwhelming. As far as information is concerned, users found the explanatory texts of the application particularly useful. The application presentation of the welcoming screens was also stated as useful and there was satisfaction with the information
provided in recipes. Finally, all participants stated that the application is useful and provides multiple tools for the organization of the nutrition. The average stated frequency of the application use was three times a week. The results of the user studies were categorized according to five dimensions based on the Mobile App Rating Scale (Stoyanov et al., 2015).

Table 6.1. Results of two user studies sorted by the dimensions based on the Mobile App Rating Scale.

<table>
<thead>
<tr>
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<th>User study 1</th>
<th>User study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>2</td>
<td>9</td>
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<tr>
<td><strong>User type</strong></td>
<td>Multimedia production experts</td>
<td>Users within the target age group</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>05/2021-06/2021</td>
<td>06/2021-07/2021</td>
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<tr>
<td><strong>Engagement</strong></td>
<td></td>
<td>-Satisfaction with personalization</td>
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<td></td>
<td></td>
<td>-Satisfaction with entertainment tool for international cuisines</td>
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<tr>
<td></td>
<td></td>
<td>-Interesting recipe tools</td>
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<td></td>
<td></td>
<td>-Frustration until realize which interactions are activated</td>
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<tr>
<td><strong>Functionality</strong></td>
<td>-In the main screen it is not clear that the user has to scroll down to proceed</td>
<td>-Easy to use</td>
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<tr>
<td></td>
<td>-The favorite cuisines screen has a different layout from the rest of the preference questions</td>
<td>-Interactivity is not present in all elements</td>
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<td></td>
<td>-There are no steps for the user profile creation</td>
<td>-The ingredients in recipe creation should be more prominent</td>
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<tr>
<td></td>
<td>-The function of the plus button and the chef’s hat in the user profile is not clear</td>
<td>-Selection of many answers in preference questions</td>
</tr>
<tr>
<td></td>
<td>-It is not clear how to close the profile specifications menu</td>
<td>-The exit icon in recipe filters is not visible</td>
</tr>
<tr>
<td></td>
<td>-In the camera scanning tool the user has to go back several times to exit the interface</td>
<td>-Should be able to complete the recipe creation</td>
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<td></td>
<td>-In the camera scanning tool it is not clear how the proposed words for the food items are used</td>
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<td></td>
<td>-In the camera scanning tool the function of the search modes is not clear</td>
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<tr>
<td></td>
<td>-The recipe overview icon is not relevant with its function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-The recipe ingredients should be more prominent</td>
<td></td>
</tr>
</tbody>
</table>
| Aesthetics | -The favorite cuisines question has a different structure from the rest of the questions | -Satisfaction with aesthetics  
- Detailed graphics  
- Sometimes stimulation is overwhelming |
| Information | -There are no recipes in the user profile | -Satisfaction with provided information in recipes  
- Satisfaction with explanatory texts throughout the application  
- Satisfaction with application presentation at the first screens |
| Subject quality | | -Useful for managing many aspects of nutrition  
- Would use on average 3 times a week |
6.2. Version 2 of Food Stories

As mentioned before, after the first user study with the multimedia production experts, improvements were made that resulted in the second version of the Food Stories application. Starting from the first screen of the application, this was separated in two different screens because the scroll down function was not clear. As seen in Figure 6.1., the welcoming screens are six instead of five and the user has to drag left in order to proceed to the next screen. The dots at the bottom indicate the five more welcoming screens and show the user how to proceed.

Figure 6.1. Version 2. Main screen of the application.
The next screen that changed was the favorite cuisines question screen. The number of the cuisines in the second version is nine instead of 15 and the layout of the screen is the same with the rest of the preference questions (Figure 6.2.). In the part of the preference questions one more question screen was created, this of the user’s medical conditions (Figure 6.3.). The reason that this question is necessary is because there is a “Medical condition” filter for the personalization of the recipes.
Moving on to the user’s profile, the “plus” icon at the top of the screen as well as the chef’s hat were deleted from the screen in order for a simple and more simplistic design to be achieved. The 24 hour stories concept was completely abandoned as the application has already many different specifications and this makes it more complicated. The “stores” icon at the bottom of the screen changed and an unedited profile was created (Figure 6.4.). A profile editing process was added with the creation of a username step (Figure 6.6.) and the entry of social media accounts step (Figure 6.7.).

Figure 6.4. Version 2. Unedited user profile.  Figure 6.5. Version 2. Edit user profile.
After the user profile editing steps, the “Done” button leads to an edited profile screen (Figure 6.8). The edited profile has a photo of the user and the profile icon at the bottom of the screen has also the user photo. In this way it is clear that this button leads to the user profile. The next screen that changed was the profile specifications screen. After creating a medical conditions personalization question, this field had to be included in the user profile specifications screen (Figure 6.9). Moreover, in the first version the specifications menu closed by dragging down the
menu. In the second version the menu closes by touching anywhere on the area outside the menu (top of the screen).

Proceeding to the camera scanning tool, here there were many functional issues. In the improved version there is an “exit” button at the top of the screen, which
enables the user to leave the scanning interface without having to go back several times (Figure 6.10.). In the first version the user could match a food item only by selecting the logged food on the photo. In the second version, the proposed words for the logged food items can also be selected so that it is easier to understand the function.

Furthermore, the search modes under the photo were deleted and three buttons for the three different search functions were created at the bottom of the screen (Figure 6.11.). Proceeding to the recipe creation interface, the “draft” icon at the top of the
screen was replaced by an “exit” button (Figure 6.12.). By leaving the interface, the recipe automatically gets transferred to the drafts field of the user’s profile specifications. Moreover the “copy style” and “create template” functions that were available in the first version were deleted. This was done in order to keep only the important functions and promote simplicity.

Figure 6.12. Version 2. Recipe cover creation screen.
Furthermore, the “recipe overview” icon was changed with an icon of a recipe book, so that it is more relatable to the button’s function. The creation of a more visible position for the recipe ingredients was considered, but eventually the design was not changed because it would require a completely different design of the interface. The last change concerning the recipe creation screens is that the “content button” was made active in every screen that it exists. The user can transition from cover to content any time in the interface. The next changes concerned the presentation of the recipes. At the bottom of the recipe cover the profile of the creator was added, as well as the reviews, comments and likes information (Figure 6.13.). At the top of the screen the “forward”, “save” and “meals diary” icons were added.

Figure 6.13. Version 2. Recipe presentation cover screen.  
These changes help the user get all the necessary information about the recipe before proceeding to the steps. The “recipe overview” button was changed to “View recipe” in order to be more specific (Figure 6.14.). In addition, it was added in all the recipe steps so that the user can see it without having to go back to the recipe cover. At the top of the screen, step bars were added to inform the user which step they execute, as well as the overall number of the steps. As far as the final screen of the recipe is concerned, the icons were enriched with details about the reviews, comments, and likes numbers (Figure 6.15.).

Figure 6.15. Version 2. Last recipe screen.

Figure 6.16. Version 2. Save recipe.
Finally, a screen which demonstrates the process of saving a recipe was created (Figure 6.16.). The “save” button opens a window where the user can save the recipe in the presented categories or add a new recipe collection. Moving on to the recipe information screens, there were also some improvements made. First of all, next to the portion information, two buttons that enable portion change were added (Figure 6.15.). The “plus” button adds more portions, and the “minus” button lowers the portion number. This function is very useful so that the amount of the ingredients is automatically converted according to the desired portions.
A “swap” button was also added next to the third ingredient. In the first version, the “swap ingredients” function was presented in the recipe creation process but not in the recipe information screen. This button opens a window with alternative ingredients that the recipe’s creator has included for this specific ingredient. Moreover, the reviews from this screen were removed as they are available both in the cover and in the last screen of the recipe. In its place, an “Add all to shopping list” button was added. With this button the user can add all the ingredients in the shopping list instead of adding them one by one.

As seen in Figure 6.18., an extra screen was created for the demonstration of adding an ingredient to the shopping list process. The user is informed that the ingredient is in the shopping list by a “shopping cart” icon next to the ingredient. Figure 6.19. presents all the ingredients added in the shopping list. Every ingredient has a shopping cart next to it and the buttons have all changed to “minus”. The last screen that was made for the recipe information is presented in Figure 6.20. This is the website were the recipe creator purchased the “fine almond flour” ingredient. The “fine almond flour” is lined with red color which makes it an active link.
The last screen that was created in the second version of the application is a complete user profile with recipes (Figure 6.21.). Under the “Followers” section there is a “Follow” button and underneath there are the posted recipes.
It is important to be mentioned that the final number of the screens was 245 as some screens needed to be repeated three times with different interactions between them. This was necessary because there are three main screens from where the user can make actions: the home screen, the search screen and the user profile screen. For example, if the user tried to make a recipe starting from the home screen, then the exit button which takes them back to where they started had to be connected to the home
screen. The same applies for the search screen and the profile screen. Another example is the pizza recipe which is also available from three different screens. It is also worth to be mentioned that after the improvements that were made on the platform, a male version was also created for the males in the second user study (Figure 6.22.). This was done in order to achieve greater identification and higher engagement rates.

Figure 6.22. Male user version of Food Stories application.
6.3. Quantitative evaluation

The quantitative research was conducted through the use of a questionnaire in order to take feedback from the target audience. The participants where the same that completed the preference questionnaire at the beginning of the research. The distribution of the questionnaire was completed on July 15th. The questionnaire had two sections. The first one collected the demographic characteristics of the audience, as well as their cooking behavior and food related internet use. Table 6.2 demonstrates the questions of the first section with the available answers.

**Table 6.2. Questionnaire distributed about cooking behavior and food related internet use.**

<table>
<thead>
<tr>
<th>Questions related to cooking behavior and food related internet use.</th>
<th>Available answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you cook your meals?</td>
<td>• Yes&lt;br&gt;• No&lt;br&gt;• Sometimes</td>
</tr>
<tr>
<td>2. How often do you cook?</td>
<td>• 1-2 times a week&lt;br&gt;• 2-4 times a week&lt;br&gt;• 4+ times a week</td>
</tr>
<tr>
<td>3. Do you search for recipes on the internet?</td>
<td>• Yes&lt;br&gt;• No</td>
</tr>
<tr>
<td>4. If yes, what device do you usually use to search for recipes?</td>
<td>• Desktop/laptop&lt;br&gt;• Tablet&lt;br&gt;• Smartphone</td>
</tr>
<tr>
<td>5. Do you use social media (Facebook, Instagram etc.) to search for recipes?</td>
<td>• Yes&lt;br&gt;• No</td>
</tr>
<tr>
<td>6. Do you follow your favorite chefs on social media?</td>
<td>• Yes&lt;br&gt;• No</td>
</tr>
<tr>
<td>7. Do you follow your favorite food places and cafeterias on social media?</td>
<td>• Yes&lt;br&gt;• No</td>
</tr>
</tbody>
</table>
8. Do you use social media to search for food places and cafeterias?
   - Yes
   - No

9. Do you follow your favorite supermarkets and food stores on social media?
   - Yes
   - No

10. Do you use social media to search for supermarkets and stores that sell food?
    - Yes
    - No

11. Do you use applications to track your nutrition and/or calories?
    - Yes
    - No

The second section of the questionnaire included questions about the usability of the application, which were created accordingly to the 10 usability heuristics of Nielsen (Gonzalez-Holland et al., 2017). Before the questionnaire, a link of the second version of Food Stories was sent to them. The female version was sent to females and the male version was sent to males. The participants conducted the questionnaire after having tested the application. The total number of the participants was 31. Table 6.3. presents the questions and the heuristics according to which they were created.

Table 6.3. Questions about the application usability according to the 10 usability heuristics of Nielsen.

<table>
<thead>
<tr>
<th>Usability Heuristics of Nielsen</th>
<th>Usability questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visibility of system status</td>
<td>Do you understand what this application is?</td>
</tr>
<tr>
<td>Match between system and the real world</td>
<td>How well do you understand the icons, symbols and words used in the application?</td>
</tr>
<tr>
<td>User control and freedom</td>
<td>Did you face any functional issues while navigating?</td>
</tr>
<tr>
<td>Consistency and standards</td>
<td>Was it easy for you to learn how to use the application?</td>
</tr>
</tbody>
</table>
Help and documentation | How well did you navigate through the pages of the application?
---|---
Error prevention | How well did the structure of the application prevent you from making errors?
Recognition rather than recall | Was there any time that you felt overwhelmed from having to remember too much information in order to navigate through the pages?
Aesthetic and minimalist design | How attractive do you think the design of the application is?
Flexibility and efficiency of use | How often would you use this application?
Help users recognize, diagnose and recover from errors | How satisfied are you with the general use of the application?

### 6.4. Quantitative evaluation results

From the participants of the evaluation questionnaire, 51.6% were males and 48.4% were females. 80.6% were 25 to 34 years old, 12.9% were 35 to 44 years old, 3.25% were within 18 to 24 age range and 3.25% was 45 and above. Regarding their education level, 22.6% had finished high school, 32.3% had a bachelor degree and 45.2% had completed master studies.

The results of the first section of the questionnaire (see appendix 2) indicate that most of the participants cook on average 3 times a week and they search for recipes on the internet through a smartphone. More than half of them search for recipes on social media and follow their favorite chefs. The participants use social media to search for food places and cafeterias and a smaller percentage use them for supermarkets and food stores. Finally, most of the respondents do not use any applications for nutrition or calorie tracking.
As far as the usability questions are concerned, the results demonstrated in Table 6.4. clearly indicate high rates of usability and satisfaction with the application’s overall use. On the other hand, some answers (see Appendix 3) in combination with the results of the user studies, shed light on possible future improvements. Some participants seem to get overwhelmed by the amount of information and aesthetic stimulation. This fact leaves room for future aesthetic improvements that will promote a more minimal design. Moreover, the complexity of the project caused some technical difficulties that could have resulted in lower functionality levels.

Table 6.4. Results of the questions about the usability of the application.

<table>
<thead>
<tr>
<th>Usability questions with answers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Do you understand what this application is?</strong></td>
<td></td>
</tr>
<tr>
<td>Very well</td>
<td>74.2%</td>
</tr>
<tr>
<td>Well</td>
<td>22.6%</td>
</tr>
<tr>
<td>Neutral</td>
<td>3.2%</td>
</tr>
<tr>
<td>No</td>
<td>Not at all</td>
</tr>
<tr>
<td><strong>How well do you understand the icons, symbols and words used in the application?</strong></td>
<td></td>
</tr>
<tr>
<td>Very well</td>
<td>80.6%</td>
</tr>
<tr>
<td>Well</td>
<td>19.4%</td>
</tr>
<tr>
<td>Neutral</td>
<td>No</td>
</tr>
<tr>
<td>Not at all</td>
<td>Not at all</td>
</tr>
<tr>
<td><strong>Did you face any functional issues while navigating?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6.5%</td>
</tr>
<tr>
<td>No</td>
<td>93.5%</td>
</tr>
<tr>
<td><strong>Was it easy for you to learn how to use the application?</strong></td>
<td></td>
</tr>
<tr>
<td>Very easy</td>
<td>74.2%</td>
</tr>
<tr>
<td>Easy</td>
<td>22.6%</td>
</tr>
<tr>
<td>Neutral</td>
<td>3.2%</td>
</tr>
<tr>
<td>No</td>
<td>Not at all</td>
</tr>
<tr>
<td><strong>How well did you navigate through the pages of the application?</strong></td>
<td></td>
</tr>
<tr>
<td>Very well</td>
<td>77.4%</td>
</tr>
<tr>
<td>Well</td>
<td>16.1%</td>
</tr>
<tr>
<td>Neutral</td>
<td>6.5%</td>
</tr>
<tr>
<td>Not well</td>
<td>Not at all</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td><strong>How well did the structure of the application prevent you from making errors?</strong></td>
<td></td>
</tr>
<tr>
<td>Very well</td>
<td>64.5%</td>
</tr>
<tr>
<td>Well</td>
<td>22.6%</td>
</tr>
<tr>
<td>Neutral</td>
<td>12.9%</td>
</tr>
<tr>
<td>Not well</td>
<td></td>
</tr>
<tr>
<td>Not at all</td>
<td></td>
</tr>
<tr>
<td><strong>Was there any time that you felt overwhelmed from having to remember too much information in order to navigate through the pages?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>19.4%</td>
</tr>
<tr>
<td>No</td>
<td>77.4%</td>
</tr>
<tr>
<td>Other</td>
<td>3.2%</td>
</tr>
<tr>
<td><strong>How attractive do you think the design of the application is?</strong></td>
<td></td>
</tr>
<tr>
<td>Very attractive</td>
<td>71%</td>
</tr>
<tr>
<td>Attractive</td>
<td>22.6%</td>
</tr>
<tr>
<td>Neutral</td>
<td>6.5%</td>
</tr>
<tr>
<td>Not so attractive</td>
<td></td>
</tr>
<tr>
<td>Not attractive at all</td>
<td></td>
</tr>
<tr>
<td><strong>How often would you use this application?</strong></td>
<td></td>
</tr>
<tr>
<td>Everyday</td>
<td>16.1%</td>
</tr>
<tr>
<td>A few times a week</td>
<td>51.6%</td>
</tr>
<tr>
<td>About once a week</td>
<td>16.1%</td>
</tr>
<tr>
<td>A few times a month</td>
<td>9.7%</td>
</tr>
<tr>
<td>Once a month</td>
<td>3.3%</td>
</tr>
<tr>
<td>Less than once a month</td>
<td>3.3%</td>
</tr>
<tr>
<td><strong>How satisfied are you with the general use of the application?</strong></td>
<td></td>
</tr>
<tr>
<td>Very much</td>
<td>80.6%</td>
</tr>
<tr>
<td>Satisfied</td>
<td>12.9%</td>
</tr>
<tr>
<td>Neutral</td>
<td>6.5%</td>
</tr>
<tr>
<td>Not so much</td>
<td></td>
</tr>
<tr>
<td>Not at all</td>
<td></td>
</tr>
</tbody>
</table>

As mentioned before, the number of the second version’s screens was 245, making Invision Studio heavy and difficult to manage. The number of interactive elements in each screen was also very high and many of them had to stay inactive in order for the software to run properly. For example, in the questions about nutrition preferences the initial design enabled users to choose multiple answers in most of them. When the prototypes were created, this was not possible because the number of screens that were required only for this part of the project was extremely big. Future
improvements should include a fully functional product with all the interactions activated.

6.4. Chapter summary

This chapter analyzed the evaluation process of Food Stories application, including the presentation of the improved version. The first evaluation was conducted through usability testing, which resulted in the second version of the application. The improved version was evaluated both through usability testing and a questionnaire based on the Usability Heuristics of Nielsen. The results indicate a positive outcome regarding the usability of the application, while there are some limitations which leave room for future improvements.
Chapter 7
Discussion

7.1. Results and discussion

This research aimed to identify how user experience (UX) design and multimedia storytelling technics can be fitted in a social media application with food content. First of all, the role of web 2.0 and new technologies in food journalism and food consumption were analyzed following a literature review. Moreover, literature review presented how user-centered and UX design techniques can serve personalized content creation. These techniques were implemented for the creation of a multimedia mobile application with personalized nutrition and food consumption content, where users are also creators.

The production process started with a methodological background analysis in order for the required steps to be followed. After the analysis of similar applications and targeted audience, the application’s features were set. The next step was the design of the application, which included the low fidelity prototypes presentation. In the implementation phase, the high fidelity prototypes were created, according to the design decisions. The project was evaluated by multimedia production experts and an improved version was created. The final feedback was received through qualitative and quantitative research, which resulted in conclusions about the targeted audience interaction with the multimedia product.

The results showed that when it comes to recipes and food places, audience uses social media to follow chefs and restaurants and find related content. On the other hand, social media are not preferred for following supermarkets and ordering groceries. The personalized application that was created included multiple tools from searching for recipes and restaurants to organizing shopping lists and ordering online
from supermarkets. The application rated high in usability and although it introduced novel and unusual to the audience practices, it was accepted by the biggest percentage. The two hypotheses that were set in the analysis phase of this research were also examined.

The first hypotheses was that user-centered design and user experience (UX) design techniques can be well fitted into a food journalism mobile application. Every part of the project was based on personalization and user experience design was implemented in order to create a unique product which serves as a food management tool. The second hypotheses was that digital storytelling and user experience (UX) design techniques have a positive influence on audience engagement in food journalism mobile application.

The evaluation results revealed high rates of engagement and the usability score of the application was elevated. More specifically, usability testing of the improved version declared satisfaction with the personalization level and the tools of the application. Participants found the product easy to use and most of the negative comments were caused by software limitations. Quantitative results were the same, with functionality rating high and most of the respondents stating that they would use the application a few times a week. Consequently, based on the evaluation outcome the hypotheses are supported.

7.2. Contribution and novelty

Although there are many recipe and food applications today, Food Stories is the first social media application which specializes in personalized nutrition and offers simple tools for everyone. Food Stories promotes personalization, not only by offering specific content to users, but also by making them producers of their own personal ideas and interests. It is a global food application, which takes advantage of
the synergistic power of social media were everyone’s contribution is necessary and a unique part of the community.

7.3. Conclusions and future work

Based on the results of this research, it could be stated that a new personalized tool has been created for nutrition and food management. However, the complexity of the project set some implementation limitations, which can be taken into consideration for future improvements. Design improvements could be made specifically for the part of inserting the ingredients of a recipe, by making this tool more prominent. Moreover, aesthetic improvements could include a more minimal design in some parts of the application. Future work also includes the actual development of the application and its release. Concluding, Food Stories initial idea has been through all the required steps until its first implemented version, which was tested and has managed to engage the targeted audience.
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APPENDIX 1

Examination of similar services

Yummly

Yummly (https://www.yummly.com/) is a website with a mobile application version which offers personalized food recipes. It includes a big database with different recipe categories such as vegetarian, vegan, paleo, pescatarian, ketogenic and low FODMAP diet. The user is able to choose what diets they are interested in, along with other food preferences such as liked and disliked ingredients, food allergies, favorite cuisines, cooking skills and personal goals around food.

Figure 3.1. Yummly Recipes & Cooking Tools. Source: https://apps.apple.com/gr/app/yummly-recipes-shopping-list/id589625334?mt=8&ign-mpt=uo%3D4

The main strength of Yummly is its search engine, which offers a high level of personalization. For example, if the user follows a vegan diet, the application
recommends vegan recipes, but it does not stop there. When searching for a specific recipe, there are extra filters with a question form and recommended answers to choose from. For example, if the user searches a recipe with chicken, Yummly asks them what kind of chicken they are looking for and demonstrates a number of answers such as “curry chicken”, “lemon chicken”, “grilled chicken” etc. There is always the option for the user to select “no preference” in order to be able to see every recipe without certain filters. Other filter questions include the following: “Are you looking for a healthy recipe?”, “Are you looking for a recipe that uses a blender?”, “How much time do you have?”, “How many ingredients should the recipe require” etc.

Figure 3.2. demonstrates the filter question about ingredients number when searching for a chicken recipe.

![Figure 3.2. Yummly application. Chicken filter question about ingredients number.](image)
Yummly offers a number of other features such as saving and organizing the recipes you like, add ingredients in a shopping list, order online from shops near you and create a meal planner. When selecting a recipe, the user can see much information about it, such as the ingredients number, the cooking time, the portions, and the nutrition. Moreover, the users can push the button “yum” when they like a recipe, and they can also leave a comment underneath. One of the most interesting tools that the Yummly application offers is the scanning tool, where the user can scan ingredients through the smartphone camera. As soon as it scans an ingredient, the application displays food options. The user can then select the food that matches the scanned ingredient and search for recipes based on it. Figure 3.3. demonstrates the scanning tool and Figure 3.4 demonstrates the recipes found based on the scanned ingredient.
A recent very useful feature is a tool that the user can embed into the bookmark toolbar, which enables them to save any recipe from the internet in the Yummly website. This is particularly convenient as having your recipes gathered in one place saves you from much effort and keeps you organized.

The major negative aspect of Yummly is that it is based in California, and it only offers delivery options and other shops information as well as subscription members only in the US. Concerning its features, a negative one is that the search engine shows only the recipes that fall into the diet category that the user has chosen and does not show any other recipes, even if the search is according to a certain ingredient. For example, if someone has “vegan” as a diet preference and tries to search a recipe with chicken, the results are zero. This could be inconvenient as someone may want to search certain recipes for multiple reasons, such as to prepare a meal for a loved one. In this case they would have to go to the “diet preferences” section and change the “vegan” preference in order to find recipes with chicken.

**Food Network Kitchen**

Food Network kitchen is a mobile application that offers recipes from the most popular chefs in the US. The user can search by ingredients or by a chef and they can find personalized recipes according to certain diets or allergies. One of the most captivating features of the application is the live watch of popular chefs while they are cooking and the interaction that the user can have with them. Recipes provide nutrition information, and they are displayed in a step-by-step directions system accompanied with photos. The user can add notes to recipes and substitutions for ingredients, as well as notifications for dinning and side dishes.
When making a recipe, the user has easy access to the ingredients list in every step. This is very convenient as they do not have to go back to the first page in order to see the ingredients. Another useful feature is that the recipes suggest ingredient substitutions, in case someone wants a variety of options. The application also includes a slideshow with new and popular recipes, videos, food trends and tips on how to create tasty dishes by the most popular chefs. Last but not least, the user can create shopping lists and order grocery directly from the application. Like “Yummly”, Food Network Kitchen does not support user content creation and lacks a community character.


Figure 3.5. Food Network Kitchen. Source: https://apps.apple.com/us/app/food-network-in-the-kitchen/id399072152?ign-itstc=399072152-399072152%3Fmt%3D8#?platform=iphone
Cookpad

Cookpad is a mobile application which has more of a social media character. Users can upload recipes and they can interact with other users by following them, reacting to their recipes with emoticons, commenting underneath and sending private messages. Recipes can also be saved and shared through messenger, Instagram, email, Facebook and Whatsapp. When the user wants to upload a recipe they follow a certain process by adding photos and directions into steps. In the application there is a section with seasonal foods and different ways that can be cooked along with proposed recipes.

Figure 3.6. Cookpad-Recipe Sharing. Source: https://apps.apple.com/gr/app/cookpad-recipe-sharing/id585332633?mt=8&ign-mpt=uo%3D4

When a user cooks another user’s recipe, they can upload a «cooksnap» under the recipe, which is a photo of how the meal turned. Figure 3.7. demonstrates the «cooksnap» feature. The recipes that have three or more «cooksnap» are considered popular and they are displayed in a distinct category inside the application.
Figure 3.8. demonstrates the home page. There are two options for the user to select, one where they can find their community recipes and one where they can find inspiration with recipes from people outside their community. In the figure we can see that every recipe comes with the name of the creator, the name of the recipe, a number of three different emoticons and the option to save the recipe.
In Figure 3.9. we can see the other two distinct recipe categories, a slideshow with tips on cooking and a slideshow with the most recent recipes.
On the negative side, the application scores low in personalization and the information provided for each recipe is quite deficient. There is no ingredients number, nutrition, difficulty level, cooking time or portion information displayed. There are no diet or allergy filters and there are no features such as meal planners or shopping lists. Cookpad is different from other food applications as it primarily promotes a community character, but it lacks essential personalization and food organizing tools.

**Epicurious**
Epicurious is a mobile application with recipes, videos, tips on cooking and other food related issues and articles that promote food and kitchen shopping. Every recipe has portions, active cooking time and total cooking time information, as well as reviews from other users. Reviews are being made in a scale from 1 to 5 and there is also a percentage of how many users have stated that they would make the recipe again. Figure 3.11. shows the home page with the recipes and Figure 3.12. demonstrates how a recipe is presented.

Figure 3.10. Epicurious. Source: https://apps.apple.com/gr/app/epicurious/id312101965?mt=8&ign-mpt=uo%3D4
The user can save the recipe, share it, and make a shopping list with the ingredients.

Figure 3.11. Epicurious. Home page.  

Figure 3.12. Epicurious. Recipe page.

Figure 3.13. shows the ingredients with the shopping list option.
• 1 bunch mint, leaves picked, stems discarded
• Juice of 2 limes
• 1 small serrano chile or green Thai chile, stem removed
• 1 tsp. cumin seeds
• 1 tsp. Diamond Crystal or ½ tsp. Morton kosher salt

Yogurt and assembly
• Juice of ½ lime
• 1 cup plain whole-milk yogurt
• 2 Tbsp. sugar
• ½ tsp. Diamond Crystal or ¼ tsp. Morton kosher salt
• 2 (15-oz.) cans chickpeas, rinsed
• 1 large serrano chile, thinly sliced
• 1 large tomato, finely chopped
• 1 medium red onion, thinly sliced
• ½ cup coarsely chopped cilantro, plus sprigs for serving
• 2 tsp. chaat masala, plus more for serving
• Sev (such as Garvi Gujarat, for serving)
In addition to the above features, Epicurious offers a cooking timer tool, that helps users cook their meat, vegetables, seafood, and eggs according to how well-cooked they want them. For example, if the user wants to cook a flank steak, they can choose the amount of the meat and between «Rare», «Medium-Rare», «Medium» and «Medium-Well». In Figure 3.14, we can see the different categories of food available and in Figures 3.15. and 3.16. we can see the flank steak example and the timer, accordingly.

Figure 3.14. Epicurious. Timer section-Food categories. Figure 3.15. Epicurious. Timer section-Flank steak.
When searching for recipes, the user can apply multiple filters such as meal type, dietary concerns, cuisine, ingredients, occasion, and cooking technique. There is also a demonstration of popular filters on the top of the filters page, as we can see in Figure 3.17. Overall, Epicurious provides users with useful tools, but it lacks a social character, and the personalization level is restricted to basic filters.

Figure 3.16. Epicurious. Flank steak timer.
Kitchen Stories Recipes

Kitchen Stories is a recipe mobile application that is based on a food community. Users own a profile where they can save recipes and organize them in cookbooks. A cookbook is a food category that can be created and named by the user.
For example, the user can create a cookbook with the name «breakfast» and use it to save all the recipes that they want to eat for breakfast.

Users can search for recipes, “how to” videos and articles by typing any word and the application brings up all the relevant results. In the search area, there are some categories that the application proposes, but there are not many options, and the diversity is limited. Moreover, there seems to be an inconsistency between the categories, which makes us hypothesize that they are displayed because they are the most popular, but the application does not state it clearly. In Figure 3.19, we can see the search area with the proposed categories.
As seen in the Figure, the application proposes to search for Asian food and there are no other cuisines proposed. Furthermore, only the categories of “Main” and “Dessert” are displayed, without appetizers, snacks, or salads. “Meatless” option also stands alone without any other diet options like “dairy free”, “vegan”, “gluten free” etc. This can cause confusion to the user if we consider the fact that when human brain sees items close to each other, it assumes that they go together (Weinschenk, 2011).

Figure 3.19. Kitchen Stories. Search button.
When searching for recipes, there are seven filters to apply: Category, Diet, Cuisine, Main ingredients, Occasion, Appliances, and Type (Figure 3.20.). Under the “type” filter there are three options: “Recipes”, “How-To” and “Articles”. The diet filters include the basic diets “Meatless”, “Vegetarian”, “Vegan”, “Gluten-free”, “Sugar-free” and “Alcohol-free”.

Figure 3.20. Kitchen Stories. Search Filters.
Recipes are presented in steps accompanied with photos and there is information about the cooking time, the portions, the difficulty level, the calories, and the macronutrients (Protein, Fat and Carbs). A very useful tool is the adjustment of the portions, which automatically converts the amount of the ingredients. The user can add the ingredients into a shopping list and there is a call to action button for starting to cook (Figure 3.22.). Figures 3.23. and 3.24. demonstrate the first two steps of a recipe.
Under each step there are the ingredients needed and the instructions with the ability to use a timer while making the recipe. At the bottom of the screen there is a progress bar which shows how many steps have been completed. Users can also upload their own recipes by following a process of predefined steps. First, they have to name the recipe and upload an image and then define the portions, the difficulty level, and the cooking time. Figures 3.25. and 3.26. demonstrate the first two steps.

![Figure 3.23. Kitchen Stories. Recipe-step 1.](image1)

![Figure 3.24. Kitchen Stories. Recipe-step 2.](image2)

Moving on, the user adds the ingredients and then the recipe steps with photos of each step. In figures 3.27. and 3.28. we can see the rest of the creation process. The
two last steps are the ones depicted in Figures 3.29. and 3.30., where the user defines three recipe categories and optionally adds a few personal notes.

Figure 3.25. Kitchen Stories. Recipe creation-step 1.

Figure 4.26. Kitchen Stories. Recipe creation-step 2.
Figure 3.27. Kitchen Stories. Recipe creation-step 3.

Figure 3.28. Kitchen Stories. Recipe creation-step 4.
Overall, the application provides the user with useful tools, and it has a well-structured process for uploading recipes. The search filters are helpful, but the personalization does not go into a deep level. For example, there is not a variety of different diets included and there are no options for allergies or disliked ingredients. The user’s profile is basic as it includes saved recipes, uploaded recipes, and liked recipes with no personalized information about dietary preferences, goals, and meal plans.
APPENDIX 2

Results from the quantitative research of the target audience preferences

The feedback from the first question indicated that 50% of the participants would use a social media application related to food, while 40.6% chose “Maybe” as an answer and 12.5% answered negatively.

Figure 3.36. Questionnaire about preferences on content of a social media food related application. First question results.

In the second question of whether the participants would like an application like this to provide users with recipes, 56.3% chose “Very much” and 21.9% chose “Yes” as an answer. This suggests that the majority of the participants are interested in recipe content. The rest of the answers gathered a relatively small percentage, with 10.4% choosing “Neutral”, 3.1% “No” and 8.3% “Not at all”.
Moving on to the third question, participants answered whether they wanted to find articles with information about nutrition in the application. Similar to the previous question, the majority answered positively with 62.5% choosing “Very much” and 20.8% choosing “Yes”. This result indicates the importance of informative content for the users. “Neutral” choice collected 11.5% and 5.2% chose “Not at all”.

Figure 3.37. Questionnaire about preferences on content of a social media food related application. Second question results.

Figure 3.38. Questionnaire about preferences on content of a social media food related application. Third question results.
An even bigger percentage responded positively to content of news about food. Positive answers reached 88.5% (60.4% “Very much” and 28.1% “Yes”) whereas 8.3% of the participants stated themselves as neutral and 3.1% chose “Not at all”.

![Figure 3.39. Questionnaire about preferences on content of a social media food related application. Fourth question results.](image)

Question number five asked about restaurant and cafeterias guides. 91.7% of the answers were positive and 8.3% of them were negative. Food guides are generally considered very useful, and this is proven by the results of this question.

![Figure 3.40. Questionnaire about preferences on content of a social media food related application. Fifth question results.](image)
When it comes to the interactivity of the application, 72.9% stated in favor of it while 27.1% answered that they did not want it to be interactive.

The majority of the participants responded also positively to the seventh question, which asked whether they would like to be able to find professionals in the food industry like chefs and nutritionists through the application. 74% of them agreed while 26% of them disagreed (Figure 3.42.).
Question number eight concerned food industry job advertisements, where 67.7% of the participants answered that they would like to see them in the application (45.8% chose “Very much” and 21.9% chose “Yes”). 18.8% chose “Neutral”, 5.2% said that they would not want to see them and 8.3% totally disagreed by choosing “Not at all”. This question received the least positive feedback in relation to the previous questions of the quantitative research.

Figure 3.43. Questionnaire about preferences on content of a social media food related application. Eighth question results.

The questionnaire proceeded with the open-ended question, the results of which were analyzed in order for patterns to be created. The first step of the process was to write down every answer on post stickers (Figure 3.44.) that were created with “Canva” (www.canva.com). Canva is a free graphic design application with easy to use tools, which enable users with no relevant expertise to create graphic design material.
The second step of the process was to group answers into categories and create the patterns (Figures 3.45.). Among the most common answers were the information and tips about nutrition, exercise, and cooking. This content seems to draw users’ attention, along with restaurant reviews and personalization. It is worth to mention that many answers indicated that when it comes to nutrition, participants view it from a wider perspective, matching it with exercise. This reveals a shift in a healthy lifestyle in general. Even when an answer did not mention the word “healthy” next to “eating”, we understand that combining it with exercise automatically means that the participant refers to healthy eating habits. This fact sheds light on how a food related
application could combine content of other aspects, which are considered to be an extension of food and nutrition.

Figure 3.45. Pattern creation from answers on questionnaire’s open-ended question.
Other answers included calorie information in recipes and in restaurant meals, quick and easy recipes, and healthy versions of deserts. Personalization requests considered saving recipes in the user’s profile, and meal plans according to Basic Metabolic Rate (MBR) and micronutrient needs. In addition, there were answers about specific diets like vegan and vegetarian, as well as the incorporation of filters for recipe personalization.

There were answers that could not fit into a category because only one participant had written them. Such answers were the request for videos and podcasts, history information about food, employees’ reviews about their employers and listening to music while cooking. There was also one answer about interactivity, which does not fall into a specific category, but rather is considered to be a basic characteristic of the application. The answers that stood alone were not included into the pattern creation process.

After the open-ended question, participants answered how useful a food related application would be for them (Figure 3.46.). 35.4% chose “Very much” and 37.5% chose “Useful”, resulting in a total of 72.9% being positive. “Somewhat” was the answer that 20.8% of the participants chose and 6.2% of them were negative (5.2% chose “Not so much” and 1% chose “Not at all”).
The last question asked the participants how often they would use a social media food application. Most of them answered “Often” (42.7%) and right after came the answer “Sometimes” with 36.5%. A small number of them chose “Very often” (12.5%) and negative answers gathered 8.4% (6.3% “Not often” and 2.1% “Never”).

Figure 3.46. Questionnaire about preferences on content of a social media food related application. Tenth question results.

Figure 3.47. Questionnaire about preferences on content of a social media food related application. Eleventh question results.
APPENDIX 3

Results of the first section of the quantitative evaluation questionnaire

The first question of the cooking behavior and food related internet use questionnaire asked the participants if they are cooking their meals. 61.3% answered “Yes”, 9.7% answered “No” and 29% answered “Sometimes”.

![Figure 6.23. Questionnaire about cooking behavior and food related internet use. First question results.](image)

In the next question about how often they cook, 41.9% answered 1-2 times a week, 38.7% answered 2-4 times a week and 19.4% answered 4 times a week or more.

![Figure 6.24. Questionnaire about cooking behavior and food related internet use. Second question results.](image)
87.1% of the participants stated that they search for recipes on the internet and 12.9% that they do not.

![Graph showing search preferences for recipes on the internet.]

Figure 6.25. Questionnaire about cooking behavior and food related internet use.

Third question results.

From those who answered positively, 86.7% searches for recipes through a smartphone and 13.3% through a desktop or laptop. Tablet had zero answers.

![Graph showing device preferences for searching recipes.]

Figure 6.26. Questionnaire about cooking behavior and food related internet use.

Fourth question results.
The next question was about social media use for recipe search. 58.1% answered positively and 41.9% answered negatively.

![Figure 6.2](image1.png)

Figure 6.27. Questionnaire about cooking behavior and food related internet use. Fifth question results.

When asked if they follow their favorite chefs on social media, 61.3% of the participants answered “Yes” and 38.7% answered “No”.

![Figure 6.28](image2.png)

Figure 6.28. Questionnaire about cooking behavior and food related internet use. Sixth question results.
Proceeding to the next question, this was about whether the participants follow their favorite food places and cafeterias on social media. The positive answers were 64.5% and the negative were 35.5%.

![Bar chart showing the percentages of participants following their favorite food places and cafeterias on social media.](image)

Figure 6.29. Questionnaire about cooking behavior and food related internet use.

Seventh question results.

In the next question about whether the users search for food places and cafeterias on social media, 83.9% answered “Yes” and 16.1% answered “No”.

![Bar chart showing the percentages of participants using social media to search for food places and cafeterias.](image)

Figure 6.30. Questionnaire about cooking behavior and food related internet use.

Eighth question results.
Moving on to the next question, 38.7% of the participants stated that they follow their favorite supermarkets on social media and 61.3% stated that they do not. In addition, the percentage of the participants who use social media to search for supermarkets was 48.4%. A negative answer gave the 51.6%.

Figure 6.31. Questionnaire about cooking behavior and food related internet use. Ninth question results.

Figure 6.32. Questionnaire about cooking behavior and food related internet use. Tenth question results.
The final question regarded application use for tracking nutrition and/or calories. The majority of the participants answered negatively, with positive answers reaching 25.8% of the sample.

![Bar chart showing the question: Do you use applications to track your nutrition and/or calories?](image)

Figure 6.3: Questionnaire about cooking behavior and food related internet use.

Eleventh question results.
APPENDIX 4

Results of the second section of the quantitative evaluation questionnaire

The first question of the usability evaluation questionnaire intended to clarify if the participants understand what the application is about. 74.2% answered “Very well”, 22.6% answered “Yes” and one participant answered “No”.

Figure 6.34. Questionnaire about usability of Food Stories application. First question results.

The next question asked how well the respondents understand the icons, symbols and words used in the application. All of them answered positively, with 80.6% choosing “Very well” and 19.4% choosing “Well”.
Figure 6.35. Questionnaire about usability of Food Stories application. Second question results.

In the question about the existence of functional issues, 93.5% answered that they did not face any of them and 6.5% answered that they did.

Figure 6.36. Questionnaire about usability of Food Stories application. Third question results.
The fourth question asked if the respondents had to remember too much information in order to navigate through the application’s pages. 77.4% answered “No” and 19.4% answered “Yes”. In this question there was an option “Other” with empty space for the participants to write a response. One respondent wrote the following answer: “Sometimes the information is too much. However it is 100% acceptable!”.

![Figure 6.37. Questionnaire about usability of Food Stories application. Fourth question results.](image)

Most of the participants stated that they navigated very well (77.4%) or well (16.1%) through the pages. 6.5% answered “Neutral”.

![Figure 6.38. Questionnaire about usability of Food Stories application. Fifth question results.](image)
The sixth question asked if it was easy for the respondents to learn how to use the application. Again almost all of them answered positively, with 74.2% choosing “Very easy”, 22.6% choosing “Easy” and 3.2% being neutral.

In the question of how well the structure of the application helped with error prevention, 64.5% answered “Very well”, 22.6% answered “Well” and 12.9% were neutral.

Seventh question results.
Moving to the question about the aesthetics of the application, 71% found it very attractive, 22.6% found it attractive and 6.5% were neutral.

Figure 6.41. Questionnaire about usability of Food Stories application. Eighth question results.

The next question asked how often the respondents would use this application. 16.1% answered “Every day” and 51.6% answered “A few times a week”. 16.1% answered “About once a week” and 9.7% said that they would use it a few times a month. A small percentage answered “Once a month” (3.3%) and “Less than once a month” (3.3%).

Figure 6.42. Questionnaire about usability of Food Stories application. Ninth question results.
The last question was about satisfaction levels concerning the application’s general use. 80.6% stated that they were “Very satisfied”. 12.9% were satisfied and 6.5% were neutral.

Figure 6.4. Questionnaire about usability of Food Stories application. Tenth question results.